



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Canyon Country District Office

82 East Dogwood

Moab, Utah 84532

<http://www.blm.gov/ut/st/en/fo/moab.html>



In Reply Refer To:
6840 (UTY000)

SEP 30 2016

Memorandum

To: Larry Crist, Utah Field Supervisor, Ecological Services, United States Fish and Wildlife Service, 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119

From: Acting BLM Canyon County District Manager *John Ransel*

Subject: Re-submittal of the Biological Assessment for the Moab Master Leasing Plan

The Canyon County District Office of the Bureau of Land Management (BLM) wishes to initiate Formal Consultation pursuant to Section 7 of the Endangered Species Act of 1973. This consultation concerns the Moab Master Leasing Plan and Proposed Management Plan Amendments/Final Environmental Impact Statement (MLP/FEIS). The BLM prepared a Biological Assessment (BA) to evaluate the listed species associated with the MLP/FEIS and submitted this BA to the United States Fish and Wildlife Service (Service) on April 26, 2016 via email for review. This review has resulted in clarifications on several issues, updated and additional lease notices, and several changes to species determinations, as noted below.

Clarification was provided on questions regarding Jones cycladenia populations and acres of potential habitats, percentages of listed species habitats, acres of un-reclaimed surface disturbance, and buffers for various water resources. Any needed changes or additional information have been added to the updated BA (attached) and are highlighted in gray.

The attached Measures to Minimize Effects of Surface Water Pumping to Endangered Colorado River Fish will be added to the Lease Notice for the Endangered Fish of the Upper Colorado River Drainage Basin as per the Service's recommendations. This addition to the lease notice will be included in the Record of Decision (ROD) for the Moab Master Leasing Plan (MLP). In addition, this updated lease notice will be added to the 2008 Resource Management Plans (RMPs).

The attached lease notice for the California condor (*Gymnogyps californianus*) was updated according to the Service's recommendations. This updated lease notice will be included in the ROD for the MLP. Also, any analysis related to this updated lease notice has been added to the BA. In addition, this updated lease notice will be added to the 2008 RMPs.

As recommended by the Service, the attached lease notice for the Navajo sedge (*Carex specuicola*) will be included in the ROD for the MLP. Minerals development under the MLP "may affect, is likely to adversely affect" the Navajo sedge. In addition, this lease notice will be added to the 2008 RMPs.

Should Isley milkvetch (*Astragalus isleyi*) or Cisco milkvetch (*Astragalus sabulosus* var. *sabulosus*) become Candidate, Proposed, Threatened, or Endangered, lease notices provided by the Service would be promptly added to the MLP and the approved RMPs.

The BLM has determined, through further analysis of the California condor's range west of Highway 191 where this species is considered endangered, that the Proposed Plan *may affect, but is not likely to adversely affect* the California condor or this portion of the condor's habitat in the Planning Area.

As discussed in the original BA (April 21, 2016), the BLM has determined that the Proposed Plan *may affect, likely to adversely affect* the Southwestern willow flycatcher (*Empidonax traillii extimus*), Yellow-billed cuckoo (*Coccyzus americanus occidentalis*), Mexican spotted owl (*Strix occidentalis lucida*), Colorado pikeminnow (*Ptychocheilus lucius*), Bonytail chub (*Gila elegans*), Humpback chub (*Gila cypha*), Razorback sucker (*Xyrauchen texanus*), and Jones cycladenia (*Cycladenia humilis* var. *jonesii*) and is "*not likely to jeopardize the continued existence* (No Jeopardy)" of the California condor within areas under non-essential, experimental status (south of Interstate 70 and west of Highway 191).

Additionally, the BLM has determined that the Proposed Plan *may affect, is likely to adversely affect* designated critical habitat for the following species: Mexican spotted owl, Colorado pikeminnow, Bonytail chub, Humpback chub and the Razorback sucker.

Before any site-specific mineral actions may occur as a result of the decisions in the Proposed Plan, additional compliance with the National Environmental Policy Act of 1969 will be required. The BLM will consult with your agency on these site-specific proposals as appropriate.

We would appreciate being informed of any missing data (if any) within one week. If you have any questions or require additional information, please contact Pam Riddle at (435) 259-2138. Thank you for your input and support.

Attachments

- 1) Biological Assessment (September 30, 2016)
- 2) Measures to Minimize Effects of Surface Water Pumping to Endangered Colorado River Fish
- 3) California Condor Lease Notice
- 4) Navajo Sedge Lease Notice

BIOLOGICAL ASSESSMENT

For the

Moab Master Leasing Plan

Proposed Plan/Final EIS

September 30, 2016

TABLE OF CONTENTS

1.0 INTRODUCTION	1
1.1 FEDERALLY PROTECTED SPECIES CONSIDERED IN THE PROPOSED ACTIONS	1
1.2 DESIGNATED AND PROPOSED CRITICAL HABITAT CONSIDERED IN THE PROPOSED ACTIONS	2
1.3 MASTER LEASING PLAN MANAGEMENT AREA	3
1.4 MOAB MASTER LEASING PLAN (MLP)	5
1.5 EFFECTS DETERMINATION DEFINITIONS	6
1.6 RESOURCE MANAGEMENT PLANNING DEVELOPMENT	7
2.0 AFFECTED SPECIES	8
2.1 CALIFORNIA CONDOR (<i>GYMNOGYPS CALIFORNIANUS</i>) - EXPERIMENTAL NONESSENTIAL/ FEDERALLY ENDANGERED	8
2.1.1 Species / Habitat Description	8
2.1.2 Life History	8
2.1.3 Status and Distribution	9
2.1.4 Threats	11
2.2 GUNNISON SAGE-GROUSE (<i>CENTROCERCUS MINIMUS</i>)- FEDERALLY THREATENED	11
2.2.1 Species / Habitat Description	11
2.2.2 Life History	11
2.2.3 Status and Distribution	11
2.2.4 Threats	12
2.3 MEXICAN SPOTTED OWL (<i>STRIX OCCIDENTALIS LUCIDA</i>)-FEDERALLY THREATENED	12
2.3.1 Species / Habitat Description	12
2.3.2 Life History	13
2.3.3 Status and Distribution	13
2.3.4 Threats	14
2.4 SOUTHWESTERN WILLOW FLYCATCHER (<i>EMPIDONAX TRAILLII EXTIMUS</i>)-FEDERALLY ENDANGERED	14
2.4.1 Species / Habitat Description	14
2.4.2 Life History	15
2.4.3 Status and Distribution	15
2.4.4 Threats	17
2.5 WESTERN YELLOW-BILLED CUCKOO (<i>COCCYZUS AMERICANUS</i>) – FEDERALLY THREATENED	17
2.5.1 Species/ Habitat description	17
2.5.2 Life History	17
2.5.3 Status and Distribution	18
2.5.4 Threats	18
2.6 BONYTAIL (<i>GILIA ELEGANS</i>), FEDERALLY ENDANGERED	18
2.6.1 Species/ Habitat Description	18
2.6.2 Life History	19
2.6.3 Status and Distribution	19
2.6.4 Threats	19
2.7 COLORADO PIKEMINNOW (<i>PTYCHOCHEILUS LUCIUS</i>) – FEDERALLY ENDANGERED	19
2.7.1 Species / Habitat Description	19
2.7.2 Life History	20
2.7.3 Status and Distribution	21
2.7.4 Threats	21
2.8 HUMPBAC CHUB (<i>GILA CYPHA</i>) - FEDERALLY ENDANGERED	21

2.8.1	Species / Habitat Description.....	21
2.8.2	Life History.....	22
2.8.3	Status and Distribution.....	22
2.8.4	Threats	23
2.9	RAZORBACK SUCKER (XYRAUCHEN TEXANUS) – FEDERALLY ENDANGERED.....	23
2.9.1	Species / Habitat Description.....	23
2.9.2	Life History.....	23
2.9.3	Status and Distribution.....	24
2.9.4	Threats	24
2.10	GREENBACK CUTTHROAT TROUT (ONCORHYNCHUS CLARKI STOMIAS) – FEDERALLY THREATENED.....	25
2.10.1	Species/ Habitat Description	25
2.10.2	Life History.....	25
2.10.3	Status and Distribution.....	25
2.10.4	Threats	26
2.11	BARNEBY REED-MUSTARD (SCHOENOCRAMBE BARNEBYI) – FEDERALLY ENDANGERED	26
2.11.1	Species/ Habitat Description	26
2.11.2	Life History.....	26
2.11.3	Status and Distribution.....	26
2.11.4	Threats	27
2.12	JONES CYCLADENIA (CYCLADENIA HUMILIS VAR. JONESII)- FEDERALLY THREATENED	27
2.12.1	Species/ Habitat Description	27
2.12.2	Life History.....	28
2.12.3	Status and Distribution.....	28
2.12.4	Threats	29
2.12.5	Threats	29
2.13	NAVAJO SEDGE.....	29
2.13.1	Species/ Habitat Description	29
2.13.2	Life History.....	29
2.13.3	Status and Distribution.....	29
3.0	MOAB MLP MANAGEMENT ACTIONS	33
3.1	MINERALS: OIL AND GAS	33
3.2	MINERALS : POTASH.....	34
3.3	AIR QUALITY	39
3.4	CULTURAL RESOURCE MANAGEMENT.....	41
3.5	LANDS AND REALTY.....	42
3.6	LANDS WITH WILDERNESS CHARACTERISTICS	42
3.7	NATURAL AREAS	43
3.8	PALEONTOLOGICAL RESOURCES	43
3.9	RECREATION.....	43
3.10	RIPARIAN RESOURCES	45
3.11	SOIL AND WATER RESOURCES.....	45
3.12	SPECIAL DESIGNATIONS	47
3.13	SPECIAL STATUS SPECIES (THREATENED, ENDANGERED, AND SENSITIVE)	48
3.14	VEGETATION	55
3.15	VISUAL/AUDITORY RESOURCE MANAGEMENT	56
3.16	WILDLIFE AND FISHERIES.....	57
4.0	LEASING NOTICES.....	58
5.0	EFFECTS ANALYSIS AND DETERMINATIONS FOR BLM MOAB MLP	67

5.1 CALIFORNIA CONDOR	68
5.1.2 Effects Determination.....	73
5.2 MEXICAN SPOTTED OWL.....	73
5.2.2 Effects Determination.....	78
5.3 SOUTHWESTERN WILLOW FLYCATCHER	79
5.3.2 Effects Determination.....	84
5.4 WESTERN YELLOW-BILLED CUCKOO	85
5.4.2 Effects Determination.....	90
5.5 ENDANGERED COLORADO RIVER FISH- BONYTAIL, COLORADO PIKEMINNOW, HUMPBAC CHUB, RAZORBACK SUCKER	90
5.5.2 Effects Determination.....	96
5.6 JONES CYCLADENIA	96
5.6.2 Effects Determination.....	101
6.0 CUMULATIVE IMPACTS	103
6.1 CUMULATIVE IMPACTS OF FUTURE NON-FEDERAL ACTIVITIES	103
7.0 SUMMARY AFFECT OF DETERMINATIONS	105
7.1 SUMMARY OF AFFECT DETERMINATIONS	105
8.0 REFERENCES	106
9.0 LIST OF CONTACTS/PREPARERS	114
9.1 LIST OF DOCUMENT PREPARERS.....	114
9.2 LIST OF CONTACTS & PERSONAL COMMUNICATION	114

TABLES

Table 1 Special Status Species Evaluated in This Report

Table 2 Land Ownership—MLP Planning Area

Table 3 Summary of Effects Determination

FIGURES

Figure 1 Map of the Master Leasing Plan-Planning Area

APPENDICES

Appendix A-Mineral Leasing Stipulations

Appendix B-Best Management Practices

1.0 INTRODUCTION

This Biological Assessment (BA) analyzes the potential impacts on threatened and endangered plant, fish, and animal species that would result from the implementation of management actions authorized under the Bureau of Land Management's Moab Master Leasing Plan (MLP). Four potential alternatives are being analyzed in the Master Leasing Plan (MLP)/Environmental Impact Statement (EIS). The EIS conducts a comprehensive analysis of four alternatives to be considered in implementing the MLP. This BA analyzes the management actions included in Alternative D, the Proposed Plan.

Section 7(a) of the Endangered Species Act (ESA) requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and its critical habitat (if applicable). Regulations implementing this interagency cooperation provision of the ESA are codified at 50 CFR 402. Section 7 (a) (2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or adversely modify or destroy its designated critical habitat.

If a Federal action "may adversely affect" a listed species or its designated critical habitat, the responsible Federal agency must enter into formal consultation with the U.S. Fish & Wildlife Service (USFWS). In addition, under the 1994 Memorandum of Understanding (MOU) and the 2000 Memorandum of Agreement (MOA) among the Bureau of Land Management (BLM), U.S. Forest Service (USFS), USFWS, and National Marine Fisheries Service (NMFS), all four agencies agreed to promote the conservation of candidate species and streamline the Section 7 consultation and coordination process.

This BA conforms to the legal requirements set forth under Section 7 of the ESA, and was guided by the Regulations on Interagency Cooperation in 50 CFR 402.12 (f).

1.1 *FEDERALLY PROTECTED SPECIES CONSIDERED IN THE PROPOSED ACTIONS*

This BA provides detailed analyses of all federally listed or proposed species and their associated designated critical habitat that may be affected by the actions included in the proposed alternative of the MLP. Development of this BA was guided by the Regulations on Interagency Cooperation (Section 7 of the ESA) in 50 CFR Part 402 and BLM Manual 6840, and it follows Utah BLMs accepted template for Biological Assessments (dated March 2004).

This BA addresses seven endangered species, five threatened species, and one experimental species. These species are known to occur within the Planning Area, on adjacent lands or have some level of potential habitats in or near the Planning Area. BLM is requesting formal Section 7 Consultation on the 13 species that are federally protected under the Endangered Species Act, as amended (see Table 1.1.1).

The following table lists the species that are being evaluated for this Biological Assessment (BA).

Table 1 Special Status Species Evaluated in This Report

Common Name	Scientific Name	Status
Avifauna		
California condor	<i>Gymnogyps californianus</i>	Experimental – Non essential/ Endangered
Gunnison sage-grouse	<i>Centrocercus minimus</i>	Endangered
Mexican spotted owl	<i>Strix occidentalis</i>	Threatened
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Endangered
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Threatened
Fish		
Bonytail	<i>Gila elegans</i>	Endangered
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	Endangered
Humpback Chub	<i>Gila cypha</i>	Endangered
Razorback Sucker	<i>Xyrauchen texanus</i>	Endangered
Greenback Cutthroat trout	<i>Oncorhynchus clarki stomias</i>	Threatened
Plants		
Barneby reed-mustard	<i>Schoenocrambe barnebyi</i>	Endangered
Jones Cycladenia	<i>Cycladenia humilis</i> var. <i>jonesii</i>	Threatened
Navajo sedge	<i>Carex specuicola</i>	Threatened

1.2 DESIGNATED AND PROPOSED CRITICAL HABITAT CONSIDERED IN THE PROPOSED ACTIONS

The Mexican spotted owl, Colorado pikeminnow, and razorback sucker all have designated critical habitat within Utah.

Mexican spotted owl

The Mexican spotted owl has designated critical habitat within the Planning Area. There are approximately 4.6 million acres of designated critical habitat for the Mexican spotted owl. 175,304 acres of designated critical habitat is located within the 946,469 acre Planning Area. This includes 3.8% of the total designated critical habitat for the species. Some of the primary constituent elements for the Mexican spotted owl within the Planning Area include: (1) cooler and often more humid conditions than the surrounding area, (2) clumps or stringers of trees and/or canyon walls with crevices, ledges or caves, (3) high percent of ground litter and woody debris, and (4) riparian or woody vegetation. The primary constituent elements related to forest structure include (1) a range of tree species, (2) a shade canopy created by the tree branches covering 40 percent or more of the ground, and (3) large dead trees with a trunk diameter of at least 12 inches (Federal Register 69 CFR 53181-5398).

Endangered Colorado River Fish- Colorado pikeminnow and Razorback sucker

Within the Planning Area, there are 19,198 acres of designated critical habitat for the endangered Colorado pikeminnow and razorback sucker. Only 2.0% of the Planning Area has

designated critical habitat for these fish species. The primary constituent elements for the Colorado pikeminnow and the razorback sucker within the Planning Area include the following: (1) Space for individual and population growth and for normal behavior; (2) Food, water, air, light, minerals, or other nutritional or physiological requirements; (3) Cover or shelter; (4) Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally; (5) Habitats that are protected from disturbance or are representative of the historical geographical and ecological distributions of a species.

1.3 MASTER LEASING PLAN MANAGEMENT AREA

The Planning Area covers approximately 785,567 acres of public lands in east-central Utah south of Interstate 70. The area adjoins the town of Moab and Arches National Park. The western boundary is the Green River and the northeastern boundary of Canyonlands National Park. To the south of Moab, the Planning Area includes the Indian Creek/Lockhart Basin/Hatch Point area between Canyonlands National Park and Highway 191.

The majority of the public lands within the Planning Area are managed by the Moab Field Office. Approximately 581,624 acres (61 percent of the Planning Area) are managed by the Moab Field Office and 203,943 acres (22 percent of the Planning Area) are managed by the Monticello Field Office. An additional 13 percent of land in the Planning Area is State Trust Lands, administered by SITLA. The Planning Area encompasses a mix of land uses including developed and dispersed recreation, limited oil and gas development, and a potash facility.

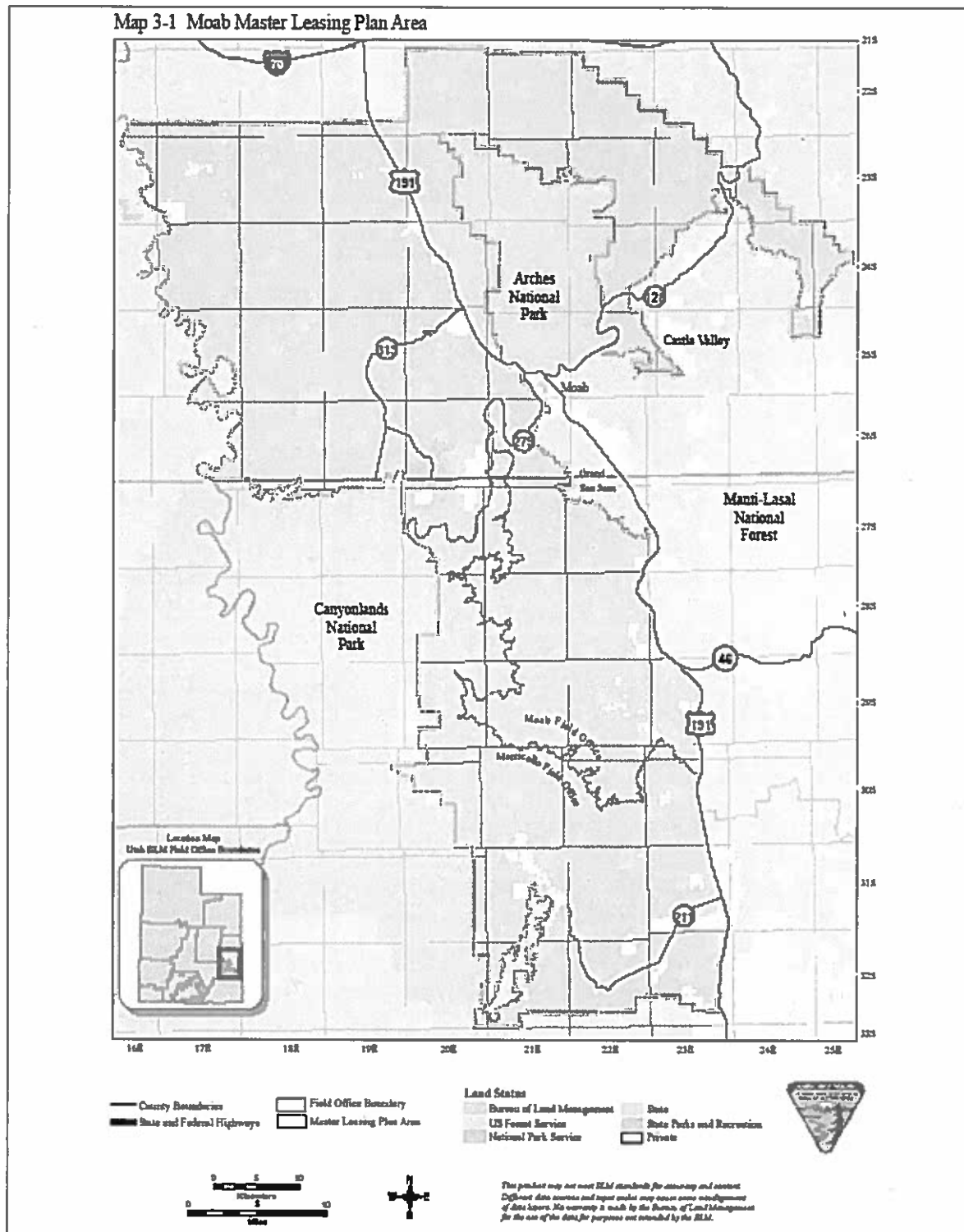
Table 2 Land Ownership—MLP Planning Area

Land Status	Moab Field Office Acres	Monticello Field Office Acres	Planning Area Total Acres
BLM	581,624	203,943	785,567
State	91,805	32,490	124,295
State Parks	4,337	40	4,377
Private	17,855	14,375	32,230
Split Estate*	9,855	5,281	15,136
Total	695,621	250,848	946,469

*Acreage not Additive

Source: BLM Canyon Country District

Figure 1 Map of the Master Leasing Plan-Planning Area



1.4 MOAB MASTER LEASING PLAN (MLP)

The MLP process will provide additional planning and analysis prior to new leasing of oil and gas and potash within the Planning Area. A MLP is a mechanism for completing additional planning, analysis, and decision making that may be necessary for areas meeting the criteria for preparing a MLP. The BLM identified lands within the Moab and Monticello Field Offices, which meet the following criteria: 1) largely unleased; 2) industry interest and high mineral development potential; 3) majority Federal mineral interest and; 4) the potential for impacts to important resource values. Therefore, the BLM exercised its discretion to utilize the MLP process.

Through the MLP process, the BLM will reconsider mineral leasing decisions in a portion of the Moab and Monticello RMP's that are covered in the designated Planning Area (PA). Management actions would only occur as a consequence of mineral activities; therefore, any mitigation or reclamation actions associated with mineral activities would be analyzed as part of the minerals program. Many of the mineral management actions are set in place to avoid or minimize potential effects to other resource values. Therefore, these actions often inadvertently reduce impacts to threatened and endangered species.

Mineral management actions consist of mitigation strategies and development constraints that include mineral leasing stipulations, mineral lease notices, mineral leasing decisions, and best management practices to protect resources identified in the various programs and resources identified below.

- Air Quality
- Cultural Resources
- Lands and Realty
- Lands with Wilderness Characteristics
- Livestock Grazing
- Natural Areas
- Paleontology
- Recreation
- Soil and Water Resources
- Special Designations
- Special Status Resources
- Vegetation Resources
- Visual Resource Management
- Wildlife and fisheries

Mineral leasing stipulations include timing limitation (TL), controlled surface use (CSU), and no surface occupancy (NSO). Areas identified with a TL stipulation prohibit surface use during specified time periods. Areas identified with a CSU stipulation require special operational constraints. Areas identified with a NSO stipulation prohibit use or occupancy of the surface for exploration and mineral development. The minerals under NSO lands may potentially be developed by directional or horizontal drilling from nearby lands that do not have the NSO limitation.

A lease notice provides more detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders. A lease notice also addresses special items the lessee should consider when planning operations but does not impose lease stipulations.

A mineral leasing decision involves an approach to lease issuance rather than a stipulation applied to a lease. Phased leasing can be applied in order to protect important resource values in areas where the feasibility of development has not been established.

Best management practices (BMPs) are state-of-the-art mitigation measures applied on a site-specific basis to reduce, prevent, or avoid adverse environmental or social impacts. BMPs are applied to management actions to aid in achieving desired outcomes for safe, environmentally sound, resource development by preventing, minimizing, or mitigating adverse impacts and reducing conflicts. For each proposed action, a number of BMPs may be applied as necessary to mitigate expected impacts. BMPs can be applied by incorporating them into individual project proposals as design features or incorporating them into the BLM's authorization of the project as conditions of approval.

1.5 EFFECTS DETERMINATION DEFINITIONS

The determinations are based on the USFWS Consultation Handbook (USFWS 1998). The determinations include:

- No Effect
- May Affect, Not Likely to Adversely Affect due to:
 - Beneficial effects
 - Insignificant effects
 - Discountable effects
- May Affect and are Likely to Adversely Affect

A determination of **No Effect** "is reached if the proposed action and its interrelated and interdependent action will not directly or indirectly affect a given listed species (USFWS, 1998, p. E-35)."

A determination of **May Affect, but Not Likely to Adversely Affect**, "is given to a resource or activity when the effects to the species are discountable, insignificant, or completely beneficial. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely" (USFWS. 1998).

A determination of **May Affect, Likely to Adversely Affect** is given if any adverse affect to a listed species may occur as a direct or indirect result of the BLM's actions or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or beneficial to the listed species (USFWS 1998 p. E-12).

Federally Proposed Species and Proposed Critical Habitat

"The BLM shall manage species proposed for listing as threatened or endangered and proposed critical habitat with the same level of protection provided for listed species and designated critical habitat" (BLM manual 6840) (See determinations above).

Candidate Species

The ESA, Section 7, consultation process is not required for the candidate species. However, because the species identified above as candidate species may eventually become proposed or listed, there are advantages to addressing the candidate species as though they were already proposed for listing. Early technical coordination with the USFWS will also yield some collaborative management advantages.

For the purposes of requesting technical assistance from the USFWS for the proposed action, the following language for Candidate Species Effects Determinations will apply:

No Impact (NI)—The appropriate conclusion when the BLM determines its proposed action will not impact candidate and BLM-sensitive species or their essential habitat. If this determination is reached, no coordination with the USFWS is likely to occur.

Not Likely to Contribute to the Need for Federal Listing (NCFL)—The appropriate conclusion when the BLM identifies situations in which the proposed action is likely to have an impact on individuals but will not likely impact the continued existence of the candidate and BLM sensitive species, either local or range-wide populations, and would not contribute to the need for the species to become listed under the ESA. If this conclusion is reached, coordination with the USFWS may be appropriate.

Likely to Contribute to the Need for Federal Listing (CFL)—The appropriate conclusion when the BLM identifies situations in which the proposed action is likely to have an impact on individuals and will likely impact the continued existence of the candidate and BLM sensitive species, either local or range-wide populations, and would contribute to the need for the species to become listed under the ESA. If this conclusion is reached, coordination with the USFWS is necessary.

1.6 RESOURCE MANAGEMENT PLANNING DEVELOPMENT

The BLM established four alternative proposals for managing mineral leasing and development pertaining to oil, gas, and potash on BLM administered lands as part of the Moab MLP and associated environmental impact statement. The BLM formulated a reasonable range of alternatives based on issues raised during scoping, planning criteria, public comments received on the preliminary alternatives, guidance applicable to specific resources, and the use of an interdisciplinary team of BLM resource specialists and cooperating agencies.

Alternative A is the No Action alternative and represents the continuation of existing mineral leasing management (oil, gas, and potash) under the Moab and Monticello Resource Management Plans (2008). This alternative is the least restrictive to mineral leasing and development; however, current management provides protection for special designations and constraints for sensitive resources. Alternative A allows for oil, gas, and potash leasing and development to occur on the same tracts of land where it is consistent with the leasing decisions in the RMPs.

Alternatives B, C, and D (the "action alternatives") would each effect change in management. Each includes proactive responses to existing conditions and circumstances, which may have changed since the existing land use plans were written. Each alternative has a different emphasis, or theme, of management that reflects a different response to the Federal mandate to balance use and conservation of resources of public lands. All four alternatives comply with applicable laws, regulations, and policies.

The Proposed Plan (Alternative D) represents an attempt to balance protection/conservation of physical, biological, and cultural resources while providing for commodity production and mineral extraction.

2.0 AFFECTED SPECIES

2.1 CALIFORNIA CONDOR (*GYMNOGYPS CALIFORNIANUS*) - EXPERIMENTAL NONESSENTIAL/ FEDERALLY ENDANGERED

2.1.1 Species / Habitat Description

The California condor is a member of the family Cathartidae, the New World vultures, a family of seven species, including the closely related Andean condor (*Vultur gryphus*) and the sympatric turkey vulture (*Cathartes aura*) (61 FR 54043). California condors are among the largest flying birds in the world (USFWS 1996; 61 FR 54043). Adults weigh approximately 10 kilograms (22 pounds) and have a wing span up to 2.9 meters (9.5 feet) (61 FR 54043). Adults are black except for prominent white underwing linings and edges of the upper secondary coverts. The head and neck are mostly naked and the bare skin is gray, grading into various shades of yellow, red, and orange. Males and females cannot be distinguished by size or plumage characteristics. The heads of juveniles up to 3 years old are grayish black and their wing linings are variously mottled or completely dark. During the third year, the head develops yellow coloration and the wing linings become gradually whiter (N.J. Schmitt in litt. 1995; 61 FR 54043). By the time individuals are 5 or 6 years of age, they are indistinguishable from adults (Koford 1953; Wilbur 1975; Snyder et al. 1987; 61 FR 54043), but full development of the adult wing patterns may not be completed until 7 or 8 years of age (N.J. Schmitt in litt. 1995; 61 FR 54043). Habitat includes caves, cliffs and steep slopes.

2.1.2 Life History

Condors reach sexual maturity by 5 to 6 years of age and breeding occurs between 6 and 8 years of age. Courtship and nest site selection occurs from December through the spring (USFWS 1996). Nest sites include: caves, cliffs, or a crevice among boulders on a steep slope. Breeding California condors normally lay a single egg between late January and early April, every other year (USFWS 1996). The condor provides an extensive amount of parental care. The average incubation period for a condor egg is about 56 days (USFWS 1996). Both parents share responsibilities for feeding the nestling. Fledging occurs at six months of age; however, juvenile condors may be dependent on their parents for more than a year (Peregrine Fund, Calif. condor 2005). The California condor life span is unknown, but may possibly extend up to 60 years (San Diego Zoo 2005; ScienceViews.com 2005).

Condors are strict scavengers. Unlike turkey vultures, condors do not have an exceptional sense of smell (National Park Service 2005). They locate their food visually, often by investigating the activity of ravens, coyotes, eagles, and other scavengers. Without the guidance of their parents, young inexperienced juvenile condors may also investigate the activity of humans. As young condors learn and mature this human directed curiosity diminishes (National Park Service 2005).

Most deaths have been directly or indirectly related to human activity. Shootings, poisoning, lead poisoning, and collisions with power lines are considered the condors' major threats. Their slow rate of reproduction and high number of years spent reaching breeding maturity make the condor population as a whole more vulnerable to these threats.

2.1.3 Status and Distribution

The California condor is a federally-listed endangered species with non-essential, experimental status in Utah south of Interstate 70 and west of Highway 191. Under Section 10(j) of the Endangered Species Act (ESA; 16 USC 1536[c]), this means that the species is treated as though it is proposed for federal listing, rather than as endangered.

At the time of the arrival of European man in western North America, the California condor occupied a narrow Pacific coastal strip from British Columbia, Canada to Baja California Norte, Mexico (Koford 1953, Wilbur 1978). Prior to the capture of the last free-flying, wild condor in 1987, the species used a wishbone-shaped area encompassing six counties just north of Los Angeles, California. Following several years of increasingly successful captive breeding, captive-produced condors were first released back to the wild in early 1992. The wishbone-shaped area remains an important habitat area, and has been designated as the range of primary concern by the California Condor Recovery Team.

There is a Recovery Plan for the California condor. Similar to the historic threats and causes of population decline mentioned above, current threats to California Condors include collisions with man-made structures, including power lines. In addition, illegal shooting, poisoning, and habitat loss continue to threaten the species (USFWS 1996b). No condors are known to nest or occupy or have historically nested in the MLP area; however, they have the potential to move through the area. Potentially suitable nesting habitat may exist in the Planning area. A few condors have been sighted throughout Utah since being released in northern Arizona in 1996 (USFWS 1996a). Any condors that leave the experimental population area will be considered as endangered. The agreement includes provisions for the capture and return of condors, on a case-by-case basis, to the experimental population area should they be found outside of it (61 FR 54043 54060).

Mineral development could occur anywhere on public lands within the Planning Area except in areas closed to oil and gas leasing. Proposed activities absent of application of conservation measures developed to protect condors, if they occupied the Planning Area, may have negative effects on California condor and/or their habitat. In recognition of this, the Conservation Measures developed by the Service and implemented through the 2008 RMP and the proposed MLP were designed to reduce the chance of such negative effects occurring to the point where the likelihood of such effects would be *discountable*, or to reduce any potential effects to the point where they would be *insignificant* to the species and would never reach the scale where take occurs.

Based on analysis in the 2008 RMP, with application of these Conservation Measures, the proposed MLP **May Affect** but would **Not Likely to Adversely Affect** the California condor or their suitable habitats within the MFO outside non-essential, experimental status (south of Interstate 70 and west of Highway 191) habitats. Additionally, it is extremely unlikely, and therefore *discountable*, that condors would nest and reside in the MFO area outside non-essential, experimental status; visits, if they occurred, would be temporary and consist of overflights and potential short-term foraging, and therefore any impacts to these birds would be minimal and therefore *insignificant*.

Given the assumption at the leasing level that mineral leasing could result in mineral development activities on public lands and potential mineral development activities may occur in the Planning Area. Absent the application of conservation measures, these activities may have negative effects on California condor and/or their potential and suitable habitats as discussed in the Recovery Plan. In recognition of this, the conservation measures outlined in lease notices required in the RMP and conservation measures and leases notices developed in the proposed

MLP, developed with the Service recommendations, have been designed to reduce impacts. The implementation of these aforementioned conservation measures would reduce the chance of such negative effects occurring to the point where the likelihood of such effects would be discountable, or reduce any potential effects to the point where they would be insignificant to the species or their habitat, and would thus never reach the scale where take occurs. As a result, with application of these conservation measures identified in the lease notices, the action would be **Not Likely to Adversely Affect** the California condor or their potential habitat at the leasing level within the Planning Area.

Given BLM mandates mineral development on federal lands, and given that it is not possible to forecast site-specific mineral development below the leasing level, additional evaluations of situation specific effects will be the subject of subsequent "step-down" ESA evaluations. In this manner, any additional specific conservation measures necessary to accommodate site or situation-specific peculiarities not predictable at the leasing level will be developed and applied prior to local implementation of mineral development activities.

Section 7 consultations would be re-initiated if nesting or foraging California condor occurred within the Planning Area.

The following sections provide effects determinations for the California condor within the non-essential, experimental status (south of Interstate 70 and west of Highway 191) habitats.

California condor remain one of the world's rarest and most imperiled vertebrate species (Cooper 1890; Koford 1953; Wilbur 1978) with California being listed as the only species with critical habitat. Fossil records indicate that California condors once ranged over much of the southern United States. The main reason for the decline of the condors is an unsustainable mortality rate of the free-flying birds combined with a naturally low reproductive rate.

Despite intensive conservation efforts, the wild California condor population declined steadily until 1987, when the last free-flying individual was captured. During the 1980s, captive condor flocks were established at the San Diego Wild Animal Park and the Los Angeles Zoo. The first successful captive breeding was accomplished in 1988. Following several years of increasingly successful captive breeding, captive-produced condors were first released back to the wild in California in early 1992.

"On October 6, 1996, the Service announced its intention to reintroduce California condor into northern Arizona and southern Utah, and designate the released birds as a nonessential, experimental population (NEP) under Section 10(j) of the ESA (61 FR 54043). On October 29, 1996, six California condors were released at the Vermilion Cliffs in Coconino County of northern Arizona. Since then, additional birds have been released. The designated experimental population area (ExPA) includes remote federal (BLM, USFS, and NPS), Native American Reservation lands and some private lands in northern Arizona, southern Utah and southeastern Nevada (61 FR 54043). The primary release site and current nesting sites occur at Grand Canyon National Park and Vermilion Cliffs, Arizona" (Diana Whittington, personal communication).

"The California condor may occur throughout southern Utah in a variety of habitats in Southern Utah. Although most of the time the condors will occur within the designated ExPA, condors have also been observed north of the ExPA boundary, which is any lands North of I-70. Condors have been documented in Utah as far north as Flaming Gorge Reservoir. Because the entire Planning Area is located South of I-70. The California condor will be analyzed as an experimental population only.

The California condor is expanding its range from northern Arizona have been known to include Utah for roosting and nesting. No California condors are known to nest in the Planning Area; however, they have the potential to move through the area where suitable nesting habitat does exist.

2.1.4 Threats

The decline in California condor numbers has been attributed to illegal collection of eggs and birds, poisoning from predator control, lead poisoning from ingested rifle bullet fragments and shotgun pellets from carcasses, effects of DDT and similar substances, and an increase in roads and houses throughout the open country that is needed by condors for foraging. In addition, early deaths of wild condors were likely caused from ingesting portions of poisoned carcasses.

2.2 GUNNISON SAGE-GROUSE (*CENTROCERCUS MINIMUS*)- FEDERALLY THREATENED

2.2.1 Species / Habitat Description

The Gunnison sage-grouse (*Centrocercus minimus*) is a species of sage-grouse found in the Southeastern part of Utah. The species is roughly one-third smaller than the greater sage-grouse. The males of the Gunnison sage-grouse have a very distinct white barring on their tail feathers and longer, denser filoplumes on their necks. The females resemble the Greater sage-grouse exactly, however, the size difference differentiates the two.

Although the Greater sage-grouse and the Gunnison sage-grouse species occur in very similar areas, the Gunnison sage-grouse have a much smaller and fragmented range. Gunnison sage-grouse require large expanses of sagebrush year round with a variety grasses and forbs which are interspersed with wetland and riparian ecosystems.

2.2.2 Life History

The breeding season begins in mid-March when individuals gather at breeding sites. Sage grouse are a lek species which means males gather at the lek site or strutting ground and perform an elaborate display to attract females. Lek sites may vary from 405 m² to 4.05 ha (0.1 to 10 ac) and are usually open areas surrounded by sagebrush (Patterson 1952). During breeding, males will fan their tail, and tilt it forward. They will inflate the air sacs on their chest and make plopping sounds as air is released. Nesting begins in mid-April and continues into July.

2.2.3 Status and Distribution

The Gunnison sage-grouse was listed as a threatened species, on November 12, 2014.

Within Utah, the Gunnison sage-grouse is found in the Southeastern portion of the state. Historically, the species was found in the Southwestern portion of Colorado, southeastern Utah, Northeastern Arizona and Northwestern New Mexico. Although Gunnison sage-grouse and associated habitat is known to occur within southeastern Utah, the boundary of the Moab MLP was specifically drawn to avoid Gunnison sage-grouse and its occupied habitat. BLM managers

have been diligently working to minimize and avoid as many environmental conflicts as possible. Because Gunnison sage-grouse and its occupied habitat is not located within the boundaries of the Moab MLP, the species will not be analyzed further in this document.

2.2.4 Threats

The species was listed due to a variety of threats including, habitat loss, degradation and fragmentation associated with residential and human development across its range and in particular, the Gunnison Basin, where the species is known to originate.

2.3 MEXICAN SPOTTED OWL (*STRIX OCCIDENTALIS LUCIDA*)- FEDERALLY THREATENED

2.3.1 Species / Habitat Description

The Mexican spotted owl is one of three subspecies of spotted owl recognized by the American Ornithologists' Union (AOU 1957:285). The other two subspecies are the northern (*Strix occidentalis caurina*) and the California spotted owl (*Strix occidentalis occidentalis*). The Mexican subspecies is geographically isolated from both the California and northern subspecies.

The spotted owl is mottled in appearance with irregular white and brown spots on its abdomen, back and head. Several thin white bands mark an otherwise brown tail. The spots of the Mexican spotted owl are larger and more numerous than in the other two subspecies, giving it a lighter appearance. Unlike most owls, spotted owls have dark eyes.

Adult male and female spotted owls can be identified by voice and size differentiation; however, they have similar plumage. Juveniles, subadults, and adults can be distinguished by plumage characteristics (Forsman 1981; Moen et al. 1991). Juvenile spotted owls, hatching to approximately five months, have a downy appearance. Subadults, 5 to 26 months, have pointed rectrices with white tips (Forsman 1981, Moen et al. 1991). The rectrices of adults, greater than 27 months, have rounded and mottled tips.

Although the spotted owl is often referred to as a medium-sized owl, it ranks among the largest owls in North America. Of the 19 species of owls that occur in North America, only 4 are larger than the spotted owl (Johnsgard 1988). As a species, the spotted owl averages 41-48 cm (16-19 inches) long (Earhart and Johnson 1970), 107-114 cm (42-45 inches) across the spread wings (Walker 1974), and weighs 547-647 grams (19.5-23 ounces). These measures are expressed as ranges because spotted owls exhibit reversed sexual dimorphism. This is where females are larger than males (Ganey and Ward, unpublished data).

Steep-walled rocky canyonlands provide typical owl habitat within the Planning Area. Canyon habitat is used by owls for nesting, roosting, and foraging and includes landscapes dominated by vertical walled rocky cliffs within complex watersheds, including many tributary side canyons. Rock walls must include caves, ledges, and fracture zones that provide protection for nesting and roosting sites. Although it is difficult to rely upon vegetation alone to identify canyon habitat, these areas frequently contain small clumps or stringers of mixed-conifer, ponderosa pine, pine-oak, pinyon-juniper, and/or riparian vegetation (69 FR 53181). Little is known about patterns of habitat use by foraging owls. Willey (1998) documented owl use in Utah to include canyon bottoms and adjacent rims.

2.3.2 Life History

Spotted owls have one of the lowest clutch sizes among North American owls (Johnsgard 1988). Females lay one to three eggs, two being the most common. Mexican spotted owls breed sporadically and do not nest every year (Ganey 1988). In good years, most of the population will nest, whereas in other years only a small proportion of pairs will nest successfully (Fletcher and Hollis 1994). Breeding sites are located below canyon rims; however, it is known that owls use areas outside of the canyons (i.e., rims and mesa tops). Within the Planning Area owls nest and roost primarily on cliff faces using protected caves and ledges, and forage in canyon bottoms, on cliff faces and benches, and along canyon rims and adjacent lands.

Courtship begins in March and eggs are laid in late March or early April. Incubation begins shortly after the first egg is laid and is performed entirely by the female. During incubation, the female leaves the nest only to defecate, regurgitate pellets, or receive prey delivered by the male, who does most or all of the foraging. The eggs usually hatch in early May (Ganey 1988). Females brood their young almost constantly, leaving their nests for only brief periods during the night. Nesting owls, in most cases, fledge from early to mid-June in most cases (Ganey 1988). The young depend on their parents for food during the summer and will eventually disperse out of the natal area in the fall (White et al. 1995, Verner et al. 1992, Thomas et al. 1993).

Forsman et al. (1976) described spotted owls as "perch and pounce" predators. They typically locate prey from an elevated perch by sight or sound, then pounce on the prey and capture it with their talons. Spotted owls have also been observed capturing flying prey such as birds and insects (Verner et al. 1992). Specific prey groups include: wood rats, mice, voles, rabbits, gophers, bats, birds, reptiles, and arthropods.

2.3.3 Status and Distribution

The Mexican spotted owl (*Strix occidentalis lucida*) was listed as a threatened species on March 16, 1993 (58 FR 14248). In 1995, the Recovery Plan for the Mexican Spotted Owl was completed (USFWS 1995).

Historic population size estimates and range of the Mexican spotted owl are unknown; however, present population size and distribution are thought to be similar (USFWS 1995). Ninety-one percent of known owls in 1990-1993 occurred on U.S. Forest Service lands, primarily in Arizona and New Mexico. It is unknown why there are fewer owls in Utah and Colorado but that may be a function of habitat type. Wide population fluctuations may be common for Mexican spotted owls (Gutierrez et al. 2003).

Approximately 175,304 acres of designated critical habitat and roughly 307,333 acres of potential habitat for the Mexican spotted owl is included in the Planning Area. Nineteen percent of designated critical habitat for the spotted owl is located in the Planning Area. Although this seems like a significant amount, this only 3.8% of the total designated critical habitat for the species range wide. Within the Planning Area, known nesting territory has been identified but none of these-nesting territories are located within the designated critical habitat.

Primary constituent elements for the Mexican spotted owl include: (1) cooler and often more humid conditions than the surrounding area, (2) clumps or stringers of trees and/or canyon walls with crevices, ledges or caves, (3) high percent of ground litter and woody debris, and (4) riparian or woody vegetation. The primary constituent elements related to forest structure

include (1) a range of tree species, (2) a shade canopy created by the tree branches covering 40 percent or more of the ground, and (3) large dead trees with a trunk diameter of at least 12 inches (69 Federal Register 53181-5398). Critical habitat is not the only suitable or occupied habitat available for owls. Critical habitat is only a regulatory delineation of habitat meeting primary constituent elements, and was defined based on known localities of nest sites (Protected Activity Centers; PACs) at the time of designation.

One critical habitat unit occurs within the Planning Area. The critical habitat unit located within the Planning Area includes the following:

- **Unit CP-14.** This Unit lies in Wayne, Garfield, San Juan, and Grand Counties, Utah. It includes the Dark Canyon Primitive and Wilderness areas of the BLM and FS, respectively. This Unit has lands owned and managed by the National Park Service (Canyonlands National Park and Glen Canyon National Recreation Area), the BLM, and the Forest Service (Manti La-Sal National Forest).

2.3.4 Threats

Threats to the species include predation, starvation, and accidents. Little is known about how disease and parasites contribute to mortality of spotted owls. Avian predators include great horned owls, northern goshawks, red-tailed hawks, and golden eagles. The extent of predation is unknown; however, both juveniles and adults are preyed upon (Willey 1993). Survival rates are higher in adults than juveniles (USFWS 1995). Starvation may result from low abundance or availability of prey. Most instances of starvation occurred from late fall through winter when prey resources were reduced in abundance and availability (Willey 1993, Block and Ganey, unpub. data). Starvation may also predispose individuals to increased predation. Little data is available on frequency of accidents and subsequent mortality. Instances of spotted owls being hit by cars have been documented. Owls may also collide with power lines or other obstacles (USFWS 1995). Even-aged timber harvest and catastrophic wildfire, grazing, recreation and other land uses were also mentioned as possible factors influencing the Mexican spotted owl population (USFWS 1995).

The primary threats to the species resulting from human caused actions include recreation, grazing, oil and gas exploration and development, and road improvement and development within canyons; loss, fragmentation, or modification of habitat from catastrophic fire and timber harvest within upland forests potentially used for foraging, dispersal and wintering; and increased predation associated with habitat fragmentation (USFWS 1995).

2.4 SOUTHWESTERN WILLOW FLYCATCHER (*EMPIDONAX TRAILLII* EXTIMUS)-FEDERALLY ENDANGERED

2.4.1 Species / Habitat Description

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a small neo-tropical migratory bird approximately 15 cm (5.75 in) long and weighs about 12 g (0.42 oz) (USFWS 2002). It has a grayish-green back and wings, whitish throat, light grey-olive breast, and pale yellowish belly. Two wingbars are visible; the eye ring is faint or absent. The upper mandible is dark; the lower is light with a yellowish tone. The song is a sneezy "fitz-bew," the call a repeated "whitt." Other vocalizations, usually given by flycatchers in close interactions with one another, include "wheel-adee," "wheeo" and rolling "brrrt" notes. Although males are the primary singers,

females also sing occasionally (Seutin 1987; Paxton et al. 1997; Sogge et al. 1997; SWCA 2000; USFWS 2002).

The flycatchers' nesting habitat is restricted to relatively dense growths of trees and shrubs in riparian ecosystems. These riparian habitats are associated with rivers, swamps and other wetlands, including lakes and reservoirs (Bent 1960). Most of these habitats are classified as wetlands in the legal sense: palustrine and lacustrine forested wetlands and scrub-shrub wetlands (Cowardin et al. 1979). However, some are non-wetland riparian forests. Surface water or saturated soil are typically present and ground water is generally at a depth of less than 2 or 3 meters (6.5 to 9 ft.) within or adjacent to nesting habitat.

2.4.2 Life History

Throughout its range, the southwestern willow flycatcher arrives on breeding grounds in late April and May (Sogge et al. 1997). Nesting begins in late May and early June. The young fledge from late June through mid-August (Sogge et al. 1997). Typically, one brood is raised per year, but birds have been documented raising two broods during one season and re-nesting after a failure (Whitfield 1990; Sogge et al. 1997). Females typically lay one egg per day, until the nest contains 3 or 4 eggs. Incubation begins after the last egg is laid and lasts 12 to 13 days (USFWS 2002). Nestlings fledge 12 to 15 days after hatching (USFWS 2002).

Relatively little is known regarding movements and ecology of adults and juveniles after they leave their breeding sites. Males that fail to attract or retain mates and males or pairs that are subject to significant disturbance (such as repeated cowbird parasitism, predation, etc.) may leave territories by mid-July (Sogge 1995; Sogge et al. 1997). Fledglings probably leave the breeding areas a week or two after adults, but few details are known.

Males are usually monogamous, but polygamy rates of 5% - 20% have been documented (Whitfield and Enos 1996; Sferra et al. 1997; Paradzick et al. 2000; McKernan and Braden 2001). Between-year mate fidelity is low and some flycatcher pairs may break up within a breeding season, especially if the first nest fails and subsequently pair and breed with other individuals (USFWS 2002).

Based on observations and recaptures of banded southwestern willow flycatchers, most live 1 to 4 years, with some individuals surviving 5 to 8 years (USFWS 2002).

The southwestern willow flycatcher is an insectivore. Wasps and bees (Hymenoptera) are common food items, as are flies (Diptera), beetles (Coleoptera), butterflies/moths and caterpillars (Lepidoptera) and spittlebugs (Homoptera) (Beal 1912; McCabe 1991; USFWS 2002).

2.4.3 Status and Distribution

On July 23, 1993 the USFWS proposed to list the flycatcher as an endangered species, with 1,038 km (643 mi) of riparian habitats proposed for critical habitat designation (58 FR 39495). The USFWS designated the southwestern willow flycatcher as endangered, effective March 29, 1995, deferring the critical habitat decision (60 FR 10694, February 27, 1995).

Southwestern willow flycatcher may have always been rare in southern Utah. However, where habitat existed along the Colorado River and its tributaries in southeastern Utah, it was thought to be a locally common breeding and migratory resident (Behle and Higgins 1959). Few data

are available on population trends in southern Utah. However, loss and modification of habitat is likely to have reduced populations on the Virgin, Colorado and San Juan Rivers. These losses have been due to suburban expansion and habitat changes along the Virgin River, inundation by Lake Powell on the Colorado and San Juan Rivers and encroachment of tamarisk throughout the region (Unitt 1987; BLM unpublished data).

The historical breeding range of the southwestern willow flycatcher included southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado and extreme northwestern Mexico (Hubbard 1987; Unitt 1987; Browning 1993; USFWS 2002). The flycatcher's current range is similar to the historical range, but the quantity of suitable habitat within that range is much reduced from historical levels. The flycatcher occurs from near sea level to over 2600 m (8500 ft.) but is primarily found in lower elevation riparian habitats (USFWS 2002). Throughout its range, the flycatcher's distribution follows that of its riparian habitat; relatively small, isolated, widely dispersed locales in a vast arid region (USFWS 2002).

In 2002, a Recovery Plan for the southwestern willow flycatcher was developed. The overall recovery objective for the flycatcher is to attain a population level and an amount and distribution of habitat sufficient to provide for the long-term persistence of metapopulations, even in the face of local losses (e.g., extirpation) (USFWS 2002). The Recovery Plan (USFWS 2002) includes a description of the riparian patches used by nesting southwestern willow flycatchers. These riparian patches vary widely in size and shape. Flycatchers do not typically nest in narrow strips of riparian vegetation less than 33 feet wide, although they may use these strips during migration or for breeding if they extend out into larger patches. Flycatchers often cluster their territories into small portions of riparian sites. Large parts of these sites may be irregularly occupied or not occupied at all. Territories are often bordered by additional habitat that is not defended as breeding territory, but may be important in attracting flycatchers to the site and/or providing an environmental buffer from wind or heat, for post-nesting use and for dispersal.

Currently, no designated critical habitat for the southwestern willow flycatcher is located in the Planning Area.

Only 1.3% (12,155 acres) of the Planning Area has riparian areas potentially suitable for southwestern willow flycatcher use. Only transient southwestern willow flycatcher have been identified within the Planning Area. Southwestern willow flycatcher have been documented migrating along the Indian Creek corridor area. Nesting and mating pairs have not been observed. In 2002, systematic habitat evaluations and protocol surveys began throughout the Moab FO. Currently all of the riparian habitats in the Moab FO portion of the Planning Area have been assessed and habitats suitable for nesting have had at least one season of protocol surveys performed, with many areas receiving more or periodical monitoring. All southwestern willow flycatcher detections have indicated early season migration use in only the most suitable nesting habitats along the Green, Colorado and Dolores Rivers. No nesting birds have ever been detected and are not expected to nest in the Moab FO.

Habitats evaluated in the Moab FO Planning Area as suitable for nesting or migratory use have an average of 20-60% tamarisk cover, making these habitats susceptible to suitability loss or have already been impacted as the tamarisk leaf beetle move through these areas. The tamarisk beetle will undoubtedly impact all southwestern willow flycatcher habitats over the course of time, creating short term risks and impacts to southwestern willow flycatcher that utilize tamarisk-dominated habitats but over the long term, some riparian systems should

experience benefits to southwestern willow flycatcher habitats particularly where habitat interventions and restoration is implemented.

However, because viable riparian vegetation is present within the Planning Area, southwestern willow flycatcher may begin to utilize the area for nesting, breeding and stopover visits at some time in the future. Therefore, any analysis within this document would be used in the future if or when the species occupies habitat within the Planning Area.

2.4.4 Threats

Continued declines include poor reproductive performance and/or continued threats for most remaining populations (Brown 1991; Sogge and Tibbitts 1992; Sogge et al. 1993; Muiznieks et al. 1994; 60 FR 10694). The main threats to the species have been attributed to loss, modification and fragmentation of riparian breeding habitat, loss of wintering habitat, predation and brood parasitism by the brown-headed cowbird (Whitfield 1990; Sferra et al. 1995; Sogge et al. 1997; McCarthy et al. 1998; USFWS 2002). The southwestern willow flycatcher and its habitat are threatened by urban, recreational and agricultural development, water diversion and groundwater pumping, channelization, dams and livestock grazing (USFWS 2002). Fire is an increasing threat to southwestern willow flycatcher habitat (Paxton et al. 1996), especially in monotypic saltcedar vegetation (DeLoach 1991) and where water diversions and/or groundwater pumping desiccates riparian vegetation (Sogge et al. 1997). Introduction of several non-native plant species, including the encroachment of tamarisk in riparian areas, proves to cause numerous problems to the area.

2.5 WESTERN YELLOW-BILLED CUCKOO (*COCCYZUS AMERICANUS*) – FEDERALLY THREATENED

2.5.1 Species/ Habitat description

The western yellow-billed cuckoo is one of two subspecies of the western yellow-billed cuckoo (UDWR 2003). The species is 31 cm (12 in) in length with brown/grey top feathers, white under feathers, and rusty colored flight feathers. The underside of the tail feathers is dark with large white spots. The species blends very well with its surroundings and are very hard to spot but they are easily found with its very distinctive "knocking" call.

The western subspecies is found intermittently throughout the western United States in dense riparian vegetation, including cottonwood and willow stands, tamarisk thickets, Russian olive, willows and orchards.

2.5.2 Life History

The species primarily consume insects such as caterpillars, cicadas, beetles, grasshoppers, and katydids, as well as lizards, frogs, eggs of other birds, berries and small fruits. Breeding occurs in late spring. Nest are generally built from four to 10 feet off the ground in riparian vegetation. Breeding often coincides with the appearance of cicadas, caterpillars, or other large insects (Ehrlich et al. 1992). Clutch size ranges from one to five eggs but is largest when prey is most abundant. Both parents incubate the three to four eggs for nine to 11 days (Hamilton and Hamilton 1965). Both parents also feed the young, which fledge in approximately three weeks (Kaufmann 1996). During the winter months, the birds can migrate as far south as Puerto Rico.

Southern migration begins in August and they usually return to the state by June for breeding and nesting.

Population density appears to rise and fall in relation to insect outbreaks (Kaufmann 1996).

2.5.3 Status and Distribution

In 2001, the western subspecies of the western yellow-billed cuckoo was designated as a candidate for listing (threatened or endangered status) under the ESA (66 Federal Register 38611-38626). Then on November 3, 2014, the species was listed as threatened throughout its range. No designated critical habitat for the species is located within the Planning Area.

This species occurs intermittently across the state; however, most breeding locations have not been confirmed. Historically, breeding was recorded in Weber, Salt Lake, Utah, and Washington Counties. Recent breeding has been confirmed in Salt Lake, Grand and Uintah Counties. Although it is not known to breed throughout the state, it has been recorded in the riparian habitats of the following 14 counties: Wayne, Garfield, Box Elder, Cache, Davis, Salt Lake, Wasatch, Utah, Uintah, Grand, San Juan, Washington, Iron, and Juab.

Currently, no known population of this species exists within the Planning Area. The yellow-billed cuckoo is a neotropical migrant that utilizes riparian valleys throughout the State. Although occurrence of the species is unlikely because of poor habitat conditions, viable riparian vegetation is present within the Planning Area. Approximately 1.3% (12,155 acres) of the Planning Area has riparian areas potentially suitable to house western yellow-billed cuckoo. As such, western yellow-billed cuckoo could begin to utilize the area for nesting, breeding, and stopover visits at some time in the future. If or when the species moves into the Planning Area, any analysis within this document would be used in the future.

2.5.4 Threats

Primary threats to the species are related to habitat destruction and degradation from the invasion of tamarisk, livestock use of riparian areas, water withdrawals, and human development (UDWR 2003).

2.6 BONYTAIL (*GILIA ELEGANS*), *FEDERALLY ENDANGERED*

2.6.1 Species/ Habitat Description

Bonytail, *Gila elegans*, are medium-sized (less than 600 mm or 23.62 in) fish in the minnow family. Adult bonytail are gray or olive colored on the back with silvery sides and a white belly. Adult bonytail have an elongated body with a long, thin caudal peduncle. The head is small and compressed compared to the rest of the body. The mouth is slightly overhung by the snout and there is a smooth low hump behind the head that is not as pronounced as the hump on a humpback chub.

Vanicek (1967) reported that bonytail were generally found in pools and eddies in the absence of, although occasionally adjacent to, strong current and at varying depths generally over silt and silt-boulder substrates. Adult bonytail are sympatric with humpback chub in shoreline eddies among emergent boulders and cobble and adjacent to swift current (Valdez 1990).

2.6.2 Life History

Bonytail are considered a species that is adapted to main stem rivers because it has been observed in pools and eddies (Vanicek 1967; Minckley 1973). Spawning of bonytail has never been observed in a river, but ripe fish were collected in Dinosaur National Monument in Utah during late June and early July suggesting that spawning occurred at water temperatures of about eighteen degrees Celsius (64.4 degrees Fahrenheit) (Vanicek and Kramer 1969). Similar to other closely related Gila species, bonytail probably spawn in rivers in spring over rocky substrates; spawning has been observed in reservoirs over rocky shoals and shorelines. It has been recently hypothesized that flooded bottomlands may provide important bonytail nursery habitat.

2.6.3 Status and Distribution

Bonytail were first listed as endangered on April 23, 1980 (45 FR 27710). It is currently designated as endangered throughout its entire range.

Currently, no documented self-sustaining populations exist in the wild. Formerly reported as widespread and abundant in main stem rivers (Jordan and Evermann 1896), its populations have been greatly reduced. Remnant populations presently occur in the wild in low numbers (USFWS 2002). Today it is thought to be found in large river reaches of the Colorado and Green Rivers. The Planning Area contains possible populations for this species. There are 19,198 acres of potential habitat within the Planning Area for the species (USFWS 1990b). This includes only 2.0% of the total Planning Area.

2.6.4 Threats

The primary threats to bonytail are stream flow regulation and habitat modification; also, competition with and predation by nonnative fishes; hybridization with other native Gila species; poor land-use practices, degraded water quality, pesticides and pollutants (USFWS 2002). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding and sheltering. (USFWS 2002).

2.7 COLORADO PIKEMINNOW (*PTYCHOCHEILUS LUCIUS*) – FEDERALLY ENDANGERED

2.7.1 Species / Habitat Description

Ptychocheilus lucius, the Colorado pikeminnow or squawfish, are the largest cyprinid fish (minnow family) native to North America. It is an elongated pike-like fish that during pre-development times may have grown as large as six feet in length and weighed nearly one hundred pounds (Behnke and Benson 1983). Today, Colorado pikeminnow rarely exceed three feet in length or weigh more than 18 pounds; such fish are estimated to be forty-five to fifty-five years old (Osmundson et al. 1997). The mouth of this species is large and nearly horizontal with long slender pharyngeal teeth (located in the throat), adapted for grasping and holding prey. Adults are strongly counter shaded with a dark, olive back and a white belly. Young Colorado pikeminnow are silvery and usually have a dark, wedge-shaped spot at the base of the caudal fin.

Colorado pikeminnow are long-distance migrators. They live in warm-water reaches of river main stems and larger tributaries. They require uninterrupted stream passage for spawning migrations and dispersal of young. The species is adapted to a hydrologic cycle characterized by large spring peaks of snow-melt runoff and low, relatively stable base flows (Junk et al. 1989; Johnson et al. 1995). Colorado pikeminnow use relatively deep, low-velocity eddies, pools and runs that occur in near-shore areas of main river channels (Tyus and McAda 1984; Valdez and Masslich 1989; Tyus 1990, 1991; Osmundson et al. 1995). In spring, Colorado pikeminnow use floodplain habitats, flooded tributary mouths, flooded side canyons and eddies that are available only during high flows (Tyus 1990, 1991; Osmundson et al. 1995). Gravel and cobble deposits are usually found in the habitat to be used for spawning.

2.7.2 Life History

The diet of Colorado pikeminnow longer than 7.6 to 10.2 cm (three to four in) consists almost entirely of other fish. (Vanicek and Kramer 1969). Males become sexually mature earlier and at a smaller size than do females, though all are mature by about age 7 and 500 mm (20 in) in length (Vanicek and Kramer 1969; Seethaler 1978; Hamman 1981).

Colorado pikeminnow are long-distance migrators. Adults move hundreds of miles to and from spawning areas and require long sections of river with unimpeded passage. Adults require pools, deep runs and eddy habitats maintained by high spring flows. High spring flows provide an important cue to prepare adults for migration (Harvey et al. 1993). These high spring flows maintain channel and habitat diversity, flush sediments from spawning areas, rejuvenate food production, form gravel and cobble deposits used for spawning and rejuvenate backwater nursery habitats.

Spawning occurs after spring runoff when water temperatures typically reach between eighteen and twenty-three degrees Celsius (64.4 and 73.4°F). It has occurred as early as June 15th in some years and as late as August 15th. Although direct observation of Colorado pikeminnow spawning is not possible, in one study, radio telemetry indicated spawning may occur over cobble-bottomed riffles (Tyus 1990).

Known spawning sites are also in canyon-bound reaches (McAda 2000). Because of their mobility and environmental tolerances, adult Colorado pikeminnow are more widely distributed than other life stages. Distribution patterns of adults are stable during most of the year (Tyus 1990, 1991; Irving and Modde 2000), but distribution of adults change in late spring and early summer due to migration to spawning (Tyus and McAda 1984; Tyus 1985, 1990, 1991; Irving and Modde 2000).

After hatching and emerging from the spawning substrate, Colorado pikeminnow larvae drift downstream to backwaters in sandy, alluvial regions, where they remain through most of their first year of life (Holden 1977; Tyus and Haines 1991; Muth and Snyder 1995). Backwaters and the physical factors that create them are vital to successful recruitment of early life stages of Colorado pikeminnow. It is important to note that these backwaters are formed after cessation of spring runoff within the active channel and are not floodplain features. Colorado pikeminnow larvae occupy these in-channel backwaters soon after hatching. They tend to occur in backwaters that are large, warm, deep (average, about 0.3 m or 1 foot in the Green River), and turbid (Tyus and Haines 1991). Recent research (Day et al. 1999a, 1999b; Trammell and Chart 1999) has confirmed these preferences and suggested that a particular type of backwater is preferred by Colorado pikeminnow larvae and juveniles.

2.7.3 Status and Distribution

The Colorado pikeminnow were first listed on March 11, 1967 (32 FR 4001). Full protection under the Act of 1973 occurred on January 4, 1974. It is currently designated as endangered throughout its range, except in the Salt and Verde River drainages in Arizona.

Based on early fish collection records, archaeological finds, and other observations, the Colorado pikeminnow were once found throughout warm water reaches of the entire Colorado River Basin down to the Gulf of California, and including reaches of the upper Colorado River and its major tributaries, the Green River and its major tributaries and the Gila River system in Arizona (Seethaler 1978). Natural populations of the Colorado pikeminnow are restricted to the upper Colorado River Basin in Wyoming, Colorado, Utah and New Mexico. The main stem of the Colorado River from Palisade, Colorado, to Lake Powell has known populations within this region (UDWR 2005). The Planning Area contains both populations and 19,198 acres of designated critical habitat within the Planning Area (USFWS 1991). This includes only 2.0% of the total Planning Area.

2.7.4 Threats

The primary threats to Colorado pikeminnow are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; and pesticides and pollutants (USFWS 2002). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding and sheltering. These impairments are described in further detail below. Data collected by Osmundson and Kaeding (1991) indicated that during low water year's nonnative minnows capable of preying on or competing with larval endangered fishes greatly increased in numbers.

Threats from pesticides and pollutants include accidental spills of petroleum products and hazardous materials; discharge of pollutants from uranium mill tailings and high selenium concentration in the water and food chain (USFWS 2002). Accidental spills of hazardous material into critical habitat can cause immediate mortality when lethal toxicity levels are exceeded. Pollutants from uranium mill tailings cause high levels of ammonia that exceed water quality standards. High selenium levels may adversely affect reproduction and recruitment (Hamilton and Wiedmeyer 1990; Stephens et al. 1992; Hamilton and Waddell 1994; Hamilton et al. 1996; Stephens and Waddell 1998).

2.8 HUMPBACK CHUB (*GILA CYPHA*) - **FEDERALLY ENDANGERED**

2.8.1 Species / Habitat Description

Gila cypha, humpback chub, is a medium-sized freshwater fish (less than 500 mm or 19.7 in) of the minnow family. The adults have a pronounced dorsal hump, a narrow flattened head, a fleshy snout with an inferior-subterminal mouth, and small eyes. It has silvery sides with a brown or olive colored back.

Backwaters, eddies and runs have been reported as common capture locations for young-of-year humpback chub (Valdez and Clemmer 1982). Data indicates that young utilize shallow areas. Habitat suitability index curves developed by Valdez et al. (1990) indicate young-of-year prefer average depths of 0.64 m (2.1 ft.) with a maximum of 1.55 m (5.1 ft.). Valdez et al. (1982), Wick et al. (1979), and Wick et al. (1981) found adult humpback chub in water averaging

fifty feet in depth with a maximum depth of ninety two feet. In these localities, humpback chub were associated with large boulders and steep cliffs. Gorman and Stone (1999) reported that ripe male humpback chub aggregated in areas of complex habitat structure (i.e., matrix of large boulders and travertine masses combined with chutes, runs, eddies, 0.5–2.0 m deep) and were associated with deposits of clean gravel. Generally, humpback chub show fidelity for canyon reaches and move very little (Miller et al. 1982; Archer et al. 1985; Burdick and Kaeding 1985; Kaeding et al. 1990). Tyus and Karp (1989) reported that humpback chub occupy shoreline eddy habitats. They also reported that spring peak flows were important for reproductive success because availability of these habitats is greatest during spring runoff.

2.8.2 Life History

Tyus and Karp (1991) found that humpback chub spawn during spring and early summer following peak flows at water temperatures of about twenty degrees Celsius (68°F). They estimated that the spawning period for humpback chub ranges from May into July, with spawning occurring earlier in low-flow years and later in high-flow years; spawning was thought to occur only during a four to five week period (Karp and Tyus 1990). Peak hatch of humpback larvae occur on the descending limb of the hydrograph following spring runoff at maximum daily water temperatures of approximately 20 to 21°C (68 to 69.8°F) (Chart and Lentsch 1999). Although humpback chub are believed to broadcast eggs over mid-channel cobble and gravel bars, spawning in the wild has not been observed for this species.

Humpback chub do not make extensive migrations (Karp and Tyus 1990). In some areas the humpback chub were essentially restricted to a 1.6 km (1 mi) reach. These results were based on the recapture of Carlin-tagged fish and radio telemetry studies conducted from 1979 to 1981 (Valdez et al. 1982) and 1983 to 1985 (Archer et al. 1985; USFWS 1986; Kaeding et al. 1990).

High spring flows that simulate the magnitude and timing of the natural hydrograph provide a number of benefits to humpback chub. Bank-full and over-bank flows provide allochthonous energy input to the system in the form of terrestrial organic matter and insects that are utilized as food. High spring flows clean spawning substrates of fine sediments and provides physical cues for spawning. High flows also form large re-circulating eddies used by adult fish (Chart and Lentsch 1999). High spring flows (50 percent exceedance or greater) have been correlated with increased recruitment of humpback chub (Chart and Lentsch 1999).

2.8.3 Status and Distribution

Humpback chub were listed as endangered on March 11, 1967. The USFWS designated critical habitat for the humpback chub on March 21, 1994 (59 FR 13374). Historic abundance of the humpback chub are unknown and historic distribution is surmised from various reports and collections that indicate the species presently occupies about 68% of its historic habitat (Tyus 1998).

Populations of humpback chub have been identified in the Upper Colorado River Basin with the highest concentrations found in the Black Rocks and Westwater Canyon reaches of the Colorado River near the Colorado/Utah State line (UDWR 2005). The Planning Area contains both populations and 19,198 acres of potential habitat within the Planning Area (USFWS 1990). This accounts for only 2.0% of the total Planning Area.

2.8.4 Threats

The primary threats to humpback chub are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; parasitism (Asian tapeworm); hybridization with other native *Gila* species; pesticides and pollutants (USFWS 2002). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding and sheltering. Other threats to humpback chub are flow regulation and habitat modification, predation by nonnative fishes, and pesticides and pollutants. Although historic data are limited, the apparent range-wide decline in humpback chub is likely due to a combination of factors including alteration of river habitats by reservoir inundation, changes in stream discharge and temperature, competition with and predation by introduced fish species, and other factors such as changes in food resources resulting from stream alterations (USFWS 1990). Also, extensive human alterations throughout the basin prior to faunal surveys may have depleted or eliminated the species from some river reaches before its occurrence was documented.

2.9 RAZORBACK SUCKER (*XYRAUCHEN TEXANUS*) – FEDERALLY ENDANGERED

2.9.1 Species / Habitat Description

Razorback sucker, *Xyrauchen texanus*, is a sucker fish belonging to the family Catostomidae (meaning "down mouth"). Razorback sucker have ventral mouths with thick lips covered with papillae and no scales on its head. Suckers are bottom browsers, sucking up or scraping off small invertebrates, algae, and organic matter with their fleshy, protrusible lips (Moyle 1976). Razorback sucker are the only sucker with an abrupt sharp-edged dorsal keel behind its head. The keel becomes larger with age. The head and keel are dark, the back is olive-colored, the sides are brownish or reddish, and the abdomen is yellowish white (Sublette et al. 1990). Adults often exceed three kg (six lb.) in weight and six hundred mm (two feet) in length. Razorback sucker are long-lived. Razorback sucker adult can live forty-four to fifty years. Razorback sucker reach maturity between two and seven years of age (Minckley 1983). They can produce viable gametes even when quite old. Survival adaptations include the ability to spawn in a variety of habitats and flows regimes, and over a long season.

Outside of the spawning season, adult razorback sucker occupies a variety of shoreline and main channel habitats including slow runs, shallow to deep pools, backwaters, eddies, and other relatively slow velocity areas associated with sand substrates (Tyus 1987; Tyus and Karp 1989; Osmundson and Kaeding 1989; Valdez and Masslich 1989; Osmundson and Kaeding 1991; Tyus and Karp 1990). Razorback sucker are also known to be in off-channel habitats, flooded side canyons, washes, side channels and tributaries (Muth et al. 1998). Habitat requirements of young and juvenile razorback sucker in the wild are not yet well known, particularly in native riverine environments.

2.9.2 Life History

Razorback sucker can spawn as early as age 3 or 4, when they are 35.6 cm (14.4 in) or more long. Depending on water temperature, spawning can take place as early as November or as late as June. In the upper Colorado River basin, razorbacks typically spawn between mid-April and mid-June. These fish reportedly migrate long distances to spawn, congregating in large

numbers in spawning areas. Sexually mature razorback sucker are generally collected on the ascending limb of the hydrograph from mid-April through June (depending on the specific location). Tyus and Karp (1990) and Osmundson and Kaeding (1991) reported off-channel habitats to be much warmer than the main stem river. Razorback sucker presumably moved to these areas for feeding, resting, sexual maturation, spawning and other activities associated with their reproductive cycle.

2.9.3 Status and Distribution

Razorback sucker were first listed on October 23, 1991 (56 FR 54957). It is currently designated as endangered throughout the entire range of the species. On March 14, 1989, the USFWS was petitioned to conduct a status review of the razorback sucker (56 FR 54957). The final rule stated, "Little evidence of natural recruitment has been found in the past thirty years, and numbers of adult fish captured in the last 10 years demonstrate a downward trend relative to historic abundance."

Critical habitat was designated for razorback sucker on March 21, 1994 (59 FR 13374). The Green River has the only known spawning areas for the razorback sucker, some of which are found in the Planning Area. Populations have been identified in the Colorado River from Rifle Colorado to Lee's Ferry Arizona and also in areas of the Green, Gunnison, and Yampa Rivers (UDWR 2005b). The Planning Area contains both populations and USFWS designated Critical Habitat for this species. There are 19,198 acres of designated critical habitat within the Planning Area (USFWS 1999). This accounts for only 2.0% of entire Planning Area.

2.9.4 Threats

The primary threats to razorback sucker are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; and pesticides and pollutants (USFWS 2002). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering. Significant changes have occurred in razorback sucker habitat through diversion and depletion of water, introduction of nonnative fishes, and construction and operation of dams" (56 FR 54957) and reservoirs. Dams on the main stem of the river and its major tributaries have segmented the river system, blocked migration routes and changed much of the river habitat into lake habitat. Dams have also drastically altered flows, temperatures and channel geomorphology.

Wydoski and Wick (1998) identified starvation of larval razorback sucker due to low zooplankton densities in the main channel and loss of seasonal floodplain habitats which provide adequate zooplankton densities for larval food as one of the most important factors limiting recruitment. Lower regulated river discharges, channelization, and levee construction has restricted access to those floodplain habitats. Reduction in spring peak flows may hinder the ability of razorback sucker to form spawning aggregations, because spawning cues are reduced (Modde and Irving 1998).

2.10 GREENBACK CUTTHROAT TROUT (*ONCORHYNCHUS CLARKI STOMIAS*) – FEDERALLY THREATENED

2.10.1 Species/ Habitat Description

Greenback cutthroat are known to be a smaller trout. They seldom attain a size larger than 1-2 pounds and rarely exceed a foot in length (Behnke, 1979). The species is known for its large striking round to oblong spotting pattern and intense coloration in adults during spawning (Behnke, 1979). The spotting is concentrated posteriorly on the caudal peduncle area. The species appears to be closely related to the Colorado River cutthroat trout; however, DNA studies have shown that are not and are more closely related to other trout species located within the Platte River (Proebstel 1993).

The Greenback cutthroat trout are cold water obligates. They require clean, large quantities of water. The species requires various habitat types during different life stages. Juvenile fry require protective cover with low velocity flows. Spawning Greenbacks require riffles with clean gravels. Adults and over wintering fish require deep water with low velocity flows with protective cover from boulders, logs and overhanging vegetation.

2.10.2 Life History

Greenback cutthroat are known to opportunistically feed upon invertebrates and terrestrial organisms. They also have been known to feed on crustaceans.

Spawning typically occurs from late May to Mid - July at higher elevations. Males become sexually mature at age two, females at age three. During spawning, females will build an egg pit which is usually a foot wide and three to eight inches deep.

2.10.3 Status and Distribution

The Greenback Cutthroat trout was listed as a threatened species on April 18, 1978 (43 FR 16343 16345).

It is assumed that the original distribution included all mountain and foothill habitats of the Platte River and Arkansas River drainage systems, including drainages at lower elevations than it occupies today (Behnke and Zarn 1976). The subspecies may have extended as far east as present day Greeley, Colorado, during the mid-1800s (WNTI 2007).

Generally, streams and rivers located above 6,500 ft. that has sufficient flow and is not isolated by natural fish barriers is considered historical habitat for native cutthroat trout. As such, there are limited habitats on BLM lands. There are only a few sites located on BLM managed lands which have "native cutthroat trout" habitat. Suitable waterways for native cutthroat trout on BLM lands include Range Creek, Gordon Creek, and Indian Creek on the Abajos (Justin Hart, Personal Communication 2015). In 2009, cutthroat trout found in Beaver Creek on the LaSal Mountains were thought to have the potential to be of endangered greenback cutthroat trout lineage. Professor R. Paul Evan, Microbiology & Molecular Biology of Brigham Young University and Paul Birdsey, cold water sport fisheries coordinator for the Division of Wildlife Resources indicated in a presentation given at the LaSal Sustainability Collaboration meeting on August 13, 2015 in Green River Utah, that genetic testing of these cutthroat trout has further refined their lineage to be a genetically distinct lineage of Colorado River cutthroat trout and not

the endangered greenback cutthroat trout of the Platte River and Arkansas River drainage systems. Due to the lack of endangered greenback cutthroat trout within the boundaries of the Moab MLP and the MFO, the species will not be analyzed further in this document.

2.10.4 Threats

The Greenback cutthroat trout have declined in numbers since the late 1800's due to the loss of habitat caused by mining and agriculture, hybridization, competition, water depletions, introduction of heavy metals from past mining operations, climate change, logging, habitat fragmentation, degradation of water quality, increased erosion, increased sedimentation over harvest and the introduction of non-native species (USFS, 1998).

2.11 BARNEBY REED-MUSTARD (*SCHOENOCRAMBE BARNEBYI*) – FEDERALLY ENDANGERED

2.11.1 Species/ Habitat Description

Barneby reed-mustard, *Schoenocrambe barnebyi*, is a member of the mustard family (Cruciferae) and is associated with the shrubby reed-mustard and the clay reed-mustards. It is a perennial herb that reaches 10-25 cm tall. It has sparsely leafed stems and a branched woody base that gives rise to purple-veined flowers that are white or lilac. (Ecosphere 1992; Biological and Conservation Database 2002; Welsh et al. 1993). The leaves are entire with a smooth margin, 1.5 to 5 cm long and 0.5 to 2.5 cm wide. The leaf blades are alternately arranged on the stem and are attached to the stem by a petiole. The flowers of the species have petals that are light purple with prominent darker purple veins and measure about 12mm long and 2.5 mm wide. The entire flower is about 1 cm across in full anthesis and are displayed in a raceme of, commonly, two to eight flowers at the end of the plants leafy stems (Welsh and Atwood 1977, Rollins 1982, Welsh et al. 1987).

Barneby reed-mustard grows on red clay or in fine-textured soils rich in selenium and gypsum, overlain with sandstone talus, that are derived from the Moenkopi and Chinle geologic formations of the Colorado Plateau. The species populations are on bare, steep eroding talus slopes generally on northern exposures.

2.11.2 Life History

Barneby reed-mustard bloom from late April to early June (Ecosphere 1992; Biological and Conservation Database 2002; Welsh et al. 1993). Specifically, flowering occurs from April to May and fruiting occurs May to June with reproduction being sexual. Specific pollination mechanism and vectors are not known (USFWS 1994).

2.11.3 Status and Distribution

Barneby reed-mustard was first listed on January 14, 1992 by the USFWS. It is currently designated as endangered in the entire range. The species was originally discovered in 1980 from a site in the southern portion of the San Rafael Swell in Emery County, Utah (Welsh 1981). No critical habitat has been designated for the species.

This Colorado Plateau endemic species occurs in Emery and Wayne counties in Utah. Two occurrences have been recorded. One population is located on BLM lands near Muddy Creek in the southern portion of the San Rafael Swell in Emery County and one is in Capitol Reef National Park in the Freemont River drainage west of Fruita in Wayne County, Utah (USFWS 1994). No populations of Barneby reed-mustard have been identified within the Planning Area. The population closest to the Planning Area is the Muddy Creek population. This population is separated from the Planning Area by rivers and numerous topographical barriers. For these reasons, the species will not be analyzed further in this report.

2.11.4 Threats

The Barneby reed-mustard has highly restricted distribution and very small population which make the species particularly vulnerable to any activity which would disturb its habitat (USFWS 1994). Suspected factors affecting survivorship of the species include disease, parasitism, native and non-native species, trampling, erosion and vegetative competition. Anthropogenic threats include oil and gas exploration, mining, OHV use, building stone removal and grazing animals (USFWS 1994). Trampling by hikers is a potential problem at some locations as well (Welsh and Atwood 1977). Past activities associated with uranium mining during the 1950's and 1960's may have caused the extirpation of a portion of the species population (USFWS 1994).

Because of the low reproductive rate, any loss of individual plants from collection could have a major effect on the species' survival. Collection of individual plants or flowers could adversely affect the reproductive potential of the affected population significantly.

2.12 JONES CYCLADENIA (*CYCLADENIA HUMILIS* VAR. *JONESII*)- FEDERALLY THREATENED

2.12.1 Species/ Habitat Description

Jones cycladenia (*Cycladenia humilis* var. *jonesii*) is in the dogbane family and is endemic to the Colorado Plateau in Utah and Arizona. This species was first discovered in 1914 by Marcus E. Jones and named after Jones in 1942.

Jones cycladenia is "Perennial caulescent herb 11-36 cm tall glabrous and glaucous, the lower most leaves reduced to subamplexicaul bracts, enlarging and becoming green upwards; main foliage leaves 3.5-9.5 cm long, 2-6.5 cm wide, oval to orbicular or broadly obovate, tapering abruptly to the broad petiole, thickened, entire, the apex rounded to acute; pedicels 5-25 mm long; bracts linear-lanceolate, 3-9 mm long; calyx lobes 5-11 mm long, lance linear, villous pilose, somewhat accrescent in fruit; corolla rose purple, dimorphic, either broadly lobed, or 18-21 mm long, and 13-19 mm wide, rose pink, more or less pilose, follicles 4.5-9.5 cm long; seeds brown, ca 7.5 mm long, the coma ca. 20 mm long. Flowers dimorphic, obligate on gypsophile of semi-barren tracts on geological formations with poor water" (Welsh and Atwood 1975).

Jones cycladenia is known to exist in shallow soils developed from shale originating from the Summerville, Cutler, and Chinle formations of the Colorado Plateau (Sipes, Boettinger 1997). Jones cycladenia occurs within desert shrub and scattered Pinyon/Juniper and wild buckwheat - Mormon tea communities at elevations ranging between 1340 to 1830 meters (4,400 to 6,000 feet).

2.12.2 Life History

Jones cycladenia is a long-lived perennial. Depending on the location, flowering and fruiting occurs from mid-May through June. Jones cycladenia has various methods of reproduction that include self-pollination, cross pollination and the production of clones through rhizomes. Jones cycladenia requires a pollen vector for reproduction. A variety of flies, wasps and short tongued bees or butterflies pollinate the threatened species. However, no single pollinator or group of pollinators has been observed consistently pollinating the species (Sipes et. al 1994). In 1992, enzyme electrophoresis research determined that clones do not extend more than 10 meters in any direction. Heterozygosity was low which suggested inbreeding or population sub-structuring.

2.12.3 Status and Distribution

Federal Status: On May 5, 1986, Jones cycladenia was listed as threatened under the Endangered species Act of 1973 (ESA, as amended on August 21, 1985) (Federal Register vol. 51: 16526-16530).

According to the Service (ECOS USFWS 2016) Jones cycladenia is known to or is believed to occur in Emery, Garfield, Kane and Grand Counties in Utah and in Mohave County Arizona. Jones cycladenia has been found in four isolated areas in Utah's Emery, Garfield, and Grand Counties and Arizona's Coconino County. The population in Arizona is a historical population. Nine populations occur on lands administered by the Bureau of Land Management Moab field office. Three sites are located on land administered by the Price field office. Six populations are managed by the Grand Staircase-Escalante National Monument. One site is managed by Capitol Reef National Park. Known occurrences of this species in the Moab Field Office outside of the Planning area exist in Castle Valley and in the Onion Creek area, . Surveys completed in 2014 found at least one population of Jones cycladenia covering approximately one acre on public lands on the slopes below Dead Horse Point State Park within the Planning Area.

In 2011, J.G. Management Systems, Inc. developed a model for Jones cycladenia in Utah and Brian Elliott with Elliott Environmental Consulting (EEC) was sub-contracted to do the field work to verify the Jones cycladenia model housed at the Utah BLM State Office. The model only includes federal lands. In 2014 this model was updated. A general assumption of the model is that soils within approximately one mile from the Chinle, Cutler, and Summerville Formations are included in this model coupled with topography and known occurrences delineate potential that a new occurrence could be identified in a particular area or complex. EEC field work currently shows that all known populations occur in areas modeled as medium low to highest potential with surveys completed in low to lowest potential areas having negative results. All plants that have been located within the MFO have been within areas with high to medium low potential.

This model was only developed on federal lands; therefore the following information can only be used on the federal portion of the Planning Area. The model depicts approximately 472,000 acres (60 percent) of areas offering geological potential for occurrence on federal lands within the Planning Area of which 250,185 acres are found in the Grand County portion of the Planning Area where Jones cycladenia is known to or is believed to occur (USFWS 1999). The model maps approximately 396,200 acres (50 percent) as having a medium low to high potential of finding plants on federal lands within the Planning Area. This accounts for approximately 50

percent of federal lands within the entire Planning Area, of which 29 percent (225,000 acres) is medium low to high potential areas which are found in Grand County.

2.12.4 Threats

Studies have suggested that the genetic variation within sites is small. This is a result of self-pollination and cloning due to a lack of pollinating vectors (Sipes and Tepedino 1996). The milkweed bug *Lygaeus kalmii* (Hemiptera) has been observed causing extensive damage to Jones cycladenia plants. However, it has been suggested that population flux of the insect may determine the extent of the decline (Sipes et. al 1994). In addition, based on the type of areas Jones cycladenia is found, there is a possibility of OHV recreational use and threat to the species. Grazing, woodland management and other recreation activities may also impact this species.

2.12.5 Threats

The primary threats to the species include the utilization of the species by domestic livestock and wildlife and lowering of the water table because of local developments. Because the species is located in such a remote area, other impacts from recreational uses have occurred but are rare.

2.13 NAVAJO SEDGE

2.13.1 Species/ Habitat Description

Navajo sedge, *Carex specuicola* is a member of the Sedge family (Cyperaceae). Locally, this species is known as "yellow hay". It is a perennial forb, 2.5 – 4.5 dm (10 – 18 inches) high. It is rhizomatous with a slender triangular stem. The leaves which are clustered at the base are pale or yellow green, 1 – 2 mm (.1 inch wide), 12-20 cm (5 – 8 inches) long. The terminal spike has both male and female flowers.

The species occurs in Navajo sandstone seeps or hanging gardens within the Great Basin Conifer Woodland (Brown and Lowe 1980). The seep-spring pockets along the Navajo Sandstone Formation bedrock provide this habitat. The species can occur within inaccessible sheer cliff faces to accessible alcoves.

2.13.2 Life History

Very little research has occurred on the species. The species is a wetland obligate. Flowering and fruiting occurs from late June through September (Hermann 1970). Reproductions appears to be primarily vegetative. As with most varieties of sedge, any pollination is likely carried out by wind.

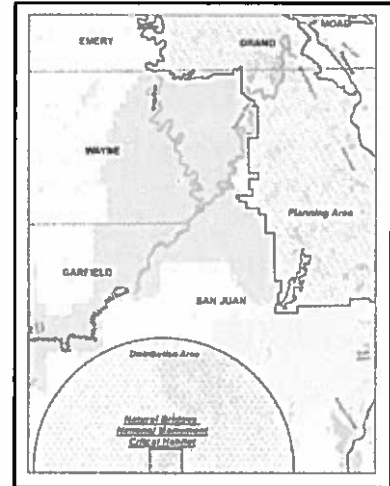
2.13.3 Status and Distribution

Navajo sedge was listed as a Threatened species on May 8, 1985 (50 FR 19370).

The species is only known to occur on the Navajo Nation, within Coconino County, Arizona and in the Natural Bridges area of San Juan County, Utah. As of 2014 a total of 57 populations have been identified, with most of these populations occurring on lands managed by the Navajo

Nation, and the remaining populations occurring on National Park Service, Hopi Tribe, and Bureau of Land Management (USFWS 2014).

Populations at the Inscription House Ruin area and in the Toenleshushe Canyon are between the elevations of 5,710 and 5,980 feet (USFWS 1987). Designated critical habitat for the species is found where this species is known to occur in Arizona and at Natural Bridges National Monument, Utah. According to the 5-year review, the nearest known populations are over 28 miles to the southwest of the closest Planning Area boundary and species distribution is approximately 10 miles outside of the Planning Area.



Originally found on Navajo Sandstone, it is now also known to occur on Cedar Mesa, De Chelly, and Kayenta sandstone formations. Springs where Navajo sedge is found are often referred to as "seep-springs" with type locality described as moist soil of a shallow cave on a cliff, vertical sandstone cliffs and alcoves of Navajo, Cedar Mesa, De Chelly, and Kayenta sandstone formations. These seep-springs usually emerge from perched, unconfined aquifers in aeolian sandstone units. The hydrogeologic processes that result in these unique ecosystems also control the geomorphologic processes that shape the rock wall or associated canyons (Springer and Stevens 2009). This plant was initially recognized as adapted to the specialized habitat of seepages on sandstone cliffs in an arid plateau ecoregion (Howell 1949). Aside from this information and known associated species, little is known about the ecology of the Navajo Sedge. Dispersal of Navajo sedge is also unclear.

Potential geology is found within the Planning Area, but occupancy and dispersal of Navajo sedge is unclear. The hanging gardens that support known Navajo sedge populations may be paleoreugia habitats, possibly supporting descendants of montane-boreal plant species of the past. There is also evidence that supports variance as the mechanism behind the abundance of endemic plant species including the Navajo sedge, in hanging gardens. Vicariance hypothesizes that fragmentation of the environment promotes evolution by division of large populations into isolated subpopulations (USFWS 2014). It is currently unclear if either of these processes have occurred within the Planning Area and it is also unclear if Navajo sedge populations would have prevailed to occupy the same niches in the Planning Area that are occupied within the identified dispersal areas to the south. Additionally, within paleoreugia habitats, the extinction processes are often more important than dispersal (USFWS 2014); therefore locating and protecting occupied populations would be imminent whereas protecting suitable unoccupied habitats may not be needed at this time. Though local geological formations may indicate potential habitat niches for this plant in the Planning Area, the plant has very limited and specific habitat needs with dispersal mechanisms that are not well understood or documented, also making the likelihood of this plant persisting in the Planning Area unclear.

Within the Planning Area, San Juan County is mapped as containing approximately 156,300 acres of Navajo Sandstone, Cedar Mesa, or Kayenta sandstone formations and Grand County is mapped as containing 159,400 acres for a total of approximately 315,700 acres of geologic formations that may offer "seep-spring" habitats needed to support Navajo Sedge. MLP management decisions have closed (31,800 acres) or have placed No Surface Occupancy stipulation (174,600 acres) on over 65% of lands that may offer potential geology that forms these seep-spring habitats. Potash Processing Facility Area (PPFA) within San Juan County

encompasses 1.3% of the potential geology (4,241 acres) that forms seep-spring habitats of which 718 acres have No Surface Occupancy stipulations within all drainages. No PPFA areas within Grand County contain Navajo Sandstone, Cedar Mesa, or Kayenta sandstone formations.

Potential oil, gas and potash exploration and development on potentially suitable geology that supports seep-spring habitats is not expected to directly impact or directly alter these seep-spring habitats as the locations of the seep-springs are typically on steep canyon walls making these sites unavailable for pad development or installation of infrastructure needed to support oil, gas or potash exploration and development. Additionally much of these canyon bottoms support perennial and ephemeral drainages and riparian habitats riparian where No Surface Occupancy stipulations are typical required. There are also protective measures in place from current RMP stipulations and lease notices that include Conservation Measures developed by the Service that would require site assessments to delineate habitat potential, inventories to identify species occurrence, protective measures (300 foot buffers) for surface activities and buffers (1.25 miles) for activities that may alter the ground water or aquifers that support these habitats to insure that suitable and occupied habitats, populations and individual plants are protected.

Exploration and development activities are not expected to directly impact seep-spring habitats that may support Navajo sedge populations because seep-spring habitat locations are on steep canyon walls and the current RMP lease notices that identify conservation measures that require inventories and protective measure if the species is identified. Additionally, MLP management decisions implement No Surface Occupancy stipulations in canyon areas that offer perennial and ephemeral drainages and riparian areas where seep-spring habitats are typically located. Direct impacts from MLP management decisions to potential occupied habitats or populations of Navajo sedge in seep-spring habitat are unlikely; applicable conservation measures will further insure that any potential negative effects would not occur to the point where the likelihood of such effects would be discountable, or to reduce any potential effects to the point where they would be insignificant.

Although little is known about the groundwater hydrology and the dynamics of the aquifers upon which the plant communities in these seep-springs habitats depend for water, exploration drilling, pumping and extraction is not expected to draw, remove or alter water resources in these perched aquifers, as casing requirements will insure drill holes have minimal contact with the waters found in the perched aquifers. Target products are associated with geological formations located far below these perched aquifers; therefore no waters from perched aquifers in these sandstone formations are expected to be removed during extraction or pumping. Casing requirements during the exploration drilling, pumping and extraction process would ensure no contact with perched aquifers, making it highly unlikely that groundwater hydrology and the dynamics of the aquifers that support seep-springs habitats would be altered.

Additional water needs for oil, gas or potash field development or potash removal would have specific MLP stipulations in place. There are current protective measures in place through the RMP that implement stipulations and lease notices on water depletions and require consultation with the Service if depletions of more than 0.1 acre feet per project occur. Lease Notices developed by the Service that are currently in the RMP and in the proposed MLP require 1.25 mile buffers to be maintained between water depletions (or other actions that will result in changes to the local hydrology) and avoidance areas (suitable or occupied habitats) and the development of site specific distances approved by the Service for surface disturbance upslope of suitable or occupied habitats.

The proposed MLP management decisions would limit Potash field development to identified PPFA areas only, where 1.3% (4,241 acres) of potential geology is found. Proposed MLP management decisions would also act to minimize or eliminate potential impacts to groundwater hydrology within perched aquifers as the MLP requirements include closed loop drilling, avoidance of water depletions, conducting watershed analysis and initiation of Section 7 consultation as needed. Current conservation measures in the RMP and proposed conservation measures in the MLP would ensure that adverse impacts to perched aquifers and ground water that support seep-springs in the Navajo, Cedar Mesa, De Chelly, and Kayenta sandstone formations would be avoided and/or minimized and therefore MLP management decisions would have insignificant effects to Navajo sedge and its habitat.

Given the assumption at the leasing level that mineral leasing could result in mineral development activities on public lands and potential mineral development activities may occur in the Planning Area. Absent the application of conservation measures, these activities may have negative effects on Navajo sedge populations and/or their potential and suitable habitats as discussed in the Recovery Plan. In recognition of this, the conservation measures outlined in lease notices required in the RMP and conservation measures and leases notices developed in the proposed MLP, developed with the Service's recommendations, have been designed to reduce these impacts. The implementation of these aforementioned conservation measures would reduce the chance of such negative effects occurring, but given the limited information on specific habitat needs, dispersal mechanisms and known populations, it is difficult to determine if such negative effects would be discountable, or reduce any potential effects to the point where they would be insignificant to the species or its habitat. Therefore implementation of the proposed MLP **May Affect, is Likely to Adversely Affect** the Navajo sedge populations and/or its potential habitat at the leasing level within the Planning Area.

Given BLM policies mandates mineral development on federal lands, and given that it is not possible to forecast site-specific mineral development below the leasing level, additional evaluations of situation specific effects will be the subject of subsequent "step-down" ESA evaluations. In this manner, any additional specific conservation measures necessary to accommodate site or situation-specific peculiarities not predictable at the leasing level will be developed and applied prior to local implementation of mineral development activities.

If survey data indicate occupancy of this species, additional planning, NEPA analysis and/or consultation efforts with the Service will commence.

While Navajo sedge will not be analyzed further in this BA, a lease notice is included in the MLP as potential geological conditions may provide suitable habitat.

3.0 MOAB MLP MANAGEMENT ACTIONS

The management actions described in the Moab MLP would only occur as a consequence of mineral activities; therefore, any mitigation or reclamation actions associated with mineral activities would be analyzed as part of the minerals program. Many of the mineral management actions are set in place to avoid or minimize potential effects to various resource values, which includes threatened and endangered species.

3.1 MINERALS: OIL AND GAS

The primary objectives of the minerals and energy program is to provide opportunities for environmentally responsible exploration and development subject to appropriate BLM policies, laws, and regulations.

Management actions included under the Minerals: Oil and Gas program includes the following:

- In areas where mineral activities would be incompatible with existing surface use, apply a NSO stipulation for mineral leasing. These areas are as follows: Moab Landfill (82 acres), Moab Airport (296 acres), and Dead Horse Point State Park (4,337 acres).
- The size of oil and gas lease parcels would be maximized to the extent possible. This would reduce the number of operators and thereby increase the likelihood of eliminating redundant infrastructure and corridors.
- Within Potash Leasing Areas (103,619 acres), no new oil and gas leases would be issued until potash leases and permits are relinquished, cancelled, expired, or potash production is not established within 10 years after the date of the Approved Moab MLP.
- Apply a "Baseline CSU" stipulation in areas with sensitive resources in order to minimize the amount of surface disturbance and related impacts resulting from mineral development. These resources include the Courthouse Wash Watershed, the Salt Wash Watershed, Special Recreation Management Areas (where specified), selected lands identified by the BLM as having wilderness characteristics, areas inventoried as having a high visual quality (Visual Resource Inventory [VRI] Class II that is designated as VRM Class III), bighorn sheep habitat (except a small portion in the Potash Processing Facility Areas-see below), sagebrush/steppe habitat (in areas with moderately high to very high ecological intactness), and crucial deer and elk habitat.
 - The specific areas where this stipulation would be applied are also identified in the sections for the referenced resources.
- The Baseline CSU stipulation would reduce conflicts in areas with heavy recreation use, reduce the impacts to wilderness values, reduce visual intrusions, and reduce loss of wildlife habitat and consists of the following:
 1. Multiple wells per pad as appropriate.
 2. Well pads would be placed no closer than 2 miles apart.

3. Production facilities would be co-located and designed to minimize surface impacts. Pipelines and utilities would be placed along existing roads.
 4. Limit un-reclaimed surface disturbance to no more than 15 acres per well pad, including associated facilities, roads, pipelines, and utilities.
 5. Extensive interim reclamation of roadway disturbance and reclamation of well pads to well head/production facilities to minimize long-term surface disturbance.
 6. Final reclamation fully restoring the original landform. Travel routes would be restored to their original character.
 7. This stipulation would allow for geophysical operations.
 8. Compensatory mitigation outside the area of impact could be required to offset impacts to resources when onsite mitigation alone may not be sufficient to adequately mitigate impacts and achieve BLM resource objectives.
- An exception to the 2 mile spacing requirement would be provided as specified in Appendix A of the MLP.
 - Apply a NSO stipulation to Porcupine Rim and Matt Martin Point and Gold Bar Rim to eliminate potential rock falls caused by mineral activities. This stipulation would require a 0.5 mile setback from the rims (6,751 acres, Map 2-14-B/D).
 - Leasable Minerals: On 15,136 acres of split-estate lands, the BLM would apply the same lease stipulations as those applied to surrounding lands with Federal surface. Mitigation measures to protect other resource values would be developed during the appropriate site-specific environmental analysis and would be attached as conditions of approval to permits in consultation with the surface owner or SMA.
 - No lands would be open to oil and gas leasing, subject to existing laws, regulations, and formal orders; and the terms and conditions.
 - Approximately 230,765 acres would be open to oil and gas leasing subject to CSU and TL stipulations. Approximately 305,899 acres would be open to oil and gas leasing subject to a NSO stipulation.
 - Approximately 145,284 acres would be closed to oil and gas leasing.

Approximately 103,619 acres within the PLAs would be open to oil and gas leasing subject to the results of the first phase of potash leasing and development. Of these 103,619 acres, 57,308 acres would be managed with CSU and TL stipulations and 46,311 acres would be managed with a NSO stipulation.

3.2 MINERALS : POTASH

Management activities conducted under the Potash program include the following:

- In areas where mineral activities would be incompatible with existing surface use, apply a NSO stipulation for mineral leasing. These areas are as follows: Moab Landfill (82 acres), Moab Airport (296 acres), and Dead Horse Point State Park (4,337 acres).

- To the extent possible, the stipulations developed for oil and gas leasing are applicable to potash leasing.
- Apply a phased leasing approach to limit potash leasing within the Planning Area. The purpose of phased potash leasing is to test the feasibility of solution mining for deep deposits of potash on public lands within the Planning Area exclusively utilizing directional and horizontal drilling technology.
- Phased potash leasing would provide an opportunity to lease a limited portion of the Planning Area in order to determine the area's production potential and methods for minimizing resource conflicts. Phased leasing provides an adaptive management approach so that if potash were successfully discovered and produced there would then be an opportunity to consider additional potash leasing.
- Potash leases would initially only be issued within identified Potash Leasing Areas (PLAs). The PLAs include a total of about 103,619 acres and are shown on Map 2-8-B1/D. Three PLAs would initially be identified in the Planning Area: Upper Ten Mile, Red Wash, and Hatch Point. Identified PLAs include blocks of public land in areas where potash leases (Upper Ten Mile) or potash permits (Red Wash and Hatch Point) have been issued. Within these areas, potash resources have been identified and the feasibility of potash production is being pursued.
- The Upper Ten Mile PLA includes a total of about 29,127 acres and is shown on Map 2-9-B1/D. The PLA is located in the northern portion of the Ten Mile Known Potash Leasing Area (Ten Mile KPLA). A KPLA is established where a known valuable deposit of potash is identified and leasing involves a competitive process. The PLA includes lands surrounding four existing potash leases and is largely unleased for oil and gas.
- The Red Wash PLA would be identified in the Red Wash area where potash prospecting permits have been issued. The PLA would include a total of about 29,956 acres and is shown on Map 2-10-B1/D. Potash prospecting permits are part of a noncompetitive leasing process conducted outside of KPLAs. If exploration conducted on the prospecting permits results in identifying a valuable potash deposit, then the permittee can qualify for a preference right lease. The PLA is largely unleased for oil and gas.
- The Hatch Point PLA would be identified in the Hatch Point area where potash prospecting permits have been issued. The PLA would include a total of about 44,536 acres and is shown on Map 2-11-B1/D. Potash prospecting permits are part of a noncompetitive leasing process conducted outside of KPLAs. If exploration conducted on the prospecting permits results in identifying a valuable potash deposit, then the permittee can qualify for a preference right lease. About 43% of the PLA is leased for oil and gas.

Within PLAs:

- The priority within a PLA will be to explore and develop potash deposits.
- New oil and gas leasing within a PLA will be considered only upon one of the following:
 - For areas currently under an existing preference right lease, upon relinquishment, cancellation, or expiration of the lease.

- For areas currently subject to an existing prospecting permit, upon relinquishment, cancellation, or expiration of the prospecting permit, or rejection of an application for a preference right lease.
 - The Authorized Officer determines that there are compelling reasons why oil and gas leasing would be in the public interest.
- For areas within a KPLA that are not currently leased for potash and are also within a PLA, the BLM will consider approving exploration licenses and conduct competitive leasing as deemed appropriate by the Authorized Officer. In addition, the following would apply:
 - New oil and gas leasing will not be considered within a KPLA that is also within a PLA unless the Authorized Officer determines that competitive leasing of potash is unlikely to result in the production of commercial quantities of potash.
- If, within a PLA, the production of commercial quantities of potash is not achieved within a 10 year time period. The Authorized Officer may remove the area from the PLA after additional decision making. In making this decision, the Authorized Officer will consider:
 - Whether there are existing potash prospecting permits.
 - Whether there are any existing preference right or competitive potash leases and if so, the previous actions of plans of the holders to achieve production.

Outside of PLAs:

- The priority outside a PLA would be to continue to authorize oil and gas leasing and development.
- New potash exploration and development would be allowed only in new PLAs. Consequently, until a new PLA is identified, the BLM will not approve any potash prospecting permit applications, absent a determination by the Authorized Officer that there are compelling reasons that approval would be in the public interest.
- To identify an area as a new PLA, the Authorized Officer would consider the following criteria:
 - There has been a sufficient level of potash production from an existing PLA to indicate that commercial quantities of potash may be produced in the area under consideration.
 - The potential for conflict with existing or future oil and gas lease operations within the area under consideration is minimal or may be minimized.
 - The environmental impact of potash exploration and potential development within the area under consideration is consistent with all the existing laws and policies, including this MLP.
 - The area under consideration has reasonable access to an identified Potash Processing Facility Area.
- For areas outside of an existing PLA that have been designated a KPLA, the BLM will not approve exploration licenses or conduct competitive leasing unless the area is identified as a new PLA consistent with BLM authorities, and additional decision making consistent with the above criteria.

- A CSU stipulation for achieving potash production in a ten-year timeframe is found in the potash stipulation section below.
- A (PLA) would be identified in the Upper Ten Mile area. The PLA includes a total of about 29,127 acres and is shown on Map 2-9-B1/D. The PLA is located in the northern portion of the Ten Mile Known Potash Leasing Area (Ten Mile KPLA). A KPLA is established where a known valuable deposit of potash is identified and leasing involves a competitive process. The PLA includes lands surrounding four existing potash leases and outside of the current Cane Creek Oil and Gas Unit boundary.
- A (PLA) would be identified in the Red Wash area where potash prospecting permits have been issued. The PLA would include a total of about 29,956 acres and is shown on Map 2-10-B1/D. Potash prospecting permits are part of a noncompetitive leasing process conducted outside of KPLAs. If exploration conducted on the prospecting permits results in identifying a valuable potash deposit, then the permittee can qualify for a preference right potash lease.
- A (PLA) would be identified in the Hatch Point area where potash prospecting permits have been issued. The PLA would include a total of about 44,536 acres and is shown on Map 2-11-B1/D. Potash prospecting permits are part of a noncompetitive leasing process conducted outside of KPLAs. If exploration conducted on the prospecting permits results in identifying a valuable potash deposit, then the permittee can qualify for a preference right potash lease.

CSU Stipulation for Potash Prospecting Permits, Preference Right Leases, and Competitive Leases:

- All new potash leases, as well as all potash leases subject to readjustment would be subject to the following diligent development requirements:
- The Authorized Officer would pursue lease cancellation if after ten years from the date of lease issuance, potassium or related products are not being produced in paying quantities from:
 1. The lease; or
 2. The contiguous mining block, or
 3. When the gross value of the potassium compounds and other related products produced from the lease or the contiguous mining block at the point of shipment to market does not yield a return in excess all direct and indirect operating costs allocable to their production.
- The Authorized Officer may grant an extension of the diligent development period in the event of delays in the permitting process that were unforeseen, that were in no way attributable to the lessee or operator, and that could not be readily accommodated in the normal course of business by a prudent lessee or operator.
- In addition, all potash prospecting permits would include a stipulation that, if a preference right lease is ultimately issued, it would include the diligent development stipulation above.

- Apply a "Baseline CSU" stipulation in areas with sensitive resources in order to minimize the amount of surface disturbance and related impacts resulting from mineral development. These resources include the Courthouse Wash Watershed, the Salt Wash Watershed, Special Recreation Management Areas (where specified), selected lands identified by the BLM as having wilderness characteristics, areas inventoried as having a high visual quality (Visual Resource Inventory [VRI] Class II that is designated as VRM Class III), bighorn sheep habitat (except a small portion in the Potash Processing Facility Areas-see below), sagebrush/steppe habitat (in areas with moderately high to very high ecological intactness), and crucial deer and elk habitat. The Baseline CSU stipulation includes a total of about 213,218 acres and is shown on Maps 2-12-D.
- The specific areas where this stipulation would be applied are also identified in the sections for the referenced resources.
- The Baseline CSU stipulation would reduce conflicts in areas with heavy recreation use, reduce the impacts to wilderness values, reduce visual intrusions, and reduce loss of wildlife habitat and consists of the following:
 1. Multiple wells per pad as appropriate.
 2. Well pads would be placed no closer than 2 miles apart.
 3. Production facilities would be co-located and designed to minimize surface impacts. Pipelines and utilities would be placed along existing roads.
 4. Limit un-reclaimed surface disturbance to no more than 15 acres per well pad, including associated facilities, roads, pipelines, and utilities.
 5. Extensive interim reclamation of roadway disturbance and reclamation of well pads to well head/production facilities to minimize long-term surface disturbance.
 6. Final reclamation fully restoring the original landform. Travel routes would be restored to their original character.
 7. This stipulation would allow for geophysical operations.
 8. Compensatory mitigation outside the area of impact could be required to offset impacts to resources when onsite mitigation alone may not be sufficient to adequately mitigate impacts and achieve BLM resource objectives
- Apply a CSU stipulation to all potash leases that requires processing facilities to be located within a PPFA. The PPFA's involve 42,492 acres and are shown on Map 2-13-B1/D.
- Potash processing facilities can require a substantial commitment of public lands. Therefore, these facilities would be located in areas that have a minimal potential for resource conflicts. Potash Processing Facility Areas (PPFA) would be identified based on the following criteria:
 1. Located outside an SRMA with the exception of the Dee Pass Motorized Focus area within the Labyrinth Rims/Gemini Bridges SRMA and the Canyon Rims SRMA.
 2. Located outside of VRI II and VRM Class II areas along Highway 191.

3. Located only in VRM Class III or IV areas.
 4. Located outside of desert bighorn lambing, rutting, and migration habitat.
 5. Located outside of deer or elk crucial habitat.
 6. Located in lands that have low levels of ecological intactness.
 7. Located in areas within reasonable proximity to PLAs.
- This stipulation would avoid widespread impacts to recreation, visual resources, crucial deer and elk habitat, bighorn habitat, and ecologically intact lands that could result from the construction of large potash facilities. PPFAs are those areas that are not within the Baseline CSU stipulation and are not managed with a NSO stipulation (with the exception of ephemeral streams) or Closed. As part of this CSU stipulation, compensatory mitigation outside the area of impact would be required to off-set the impacts of potash processing facility construction.
 - Apply BMPs for potash processing facilities.
 - No lands within PLAs are open for potash leasing, subject to existing laws, regulations, and standard terms and conditions.
 - Approximately 57,308 acres within PLAs are open for potash leasing subject to CSU and TL stipulations.
 - Approximately 46,311 acres within PLAs are open for potash leasing subject to a NSO stipulation.
 - Approximately 536,664 acres outside PLAs are open subject to the results of the first phase of potash leasing within the PLAs. Of these 536,664 acres, 230,765 acres would be managed with CSU and TL stipulations and 305,899 acres would be managed with a NSO stipulation.

Apply BMPs as appropriate to minimize the potential resource impacts associated with mineral development (see Appendix B for a list of BMPs, by resource).

3.3 AIR QUALITY

Mineral management actions developed for Air Quality resources include the following:

- Comply with Utah Air Conservation (UAC) Regulation R446-1. The best air quality control technology, as per guidance from the Utah Division of Air Quality (UDAQ), would be applied to actions on public lands as needed to meet air quality standards.
- Comply with UAC Regulations R446-1-4.5.3 and R307-205, which prohibit the use, maintenance, or construction of roadways without taking appropriate dust abatement measures. Compliance would be obtained through special stipulations as a requirement on new projects and through the use of dust abatement control techniques in problem areas.
- Manage all BLM and BLM-authorized activities to maintain air quality within the thresholds established by the State of Utah Ambient Air Quality Standards and to ensure

that those activities continue to keep the area as attainment, meet prevention of significant deterioration (PSD) of Class I and Class II increments, and protect the air quality related values (AQRVs) in the Class I air shed of the National Parks (e.g., Arches and Canyonlands National Parks) as well as Class II areas.

- The BLM would continue to work cooperatively with State, Federal, and tribal entities in developing air quality assessment protocols to address cumulative impacts and regional air quality issues.
- National Ambient Air Quality Standards are enforced by the Utah Department of Environmental Quality, Division of Air Quality (UDEA-DAQ), with EPA oversight. When processing land use authorizations additional emission control requirements to reduce potential air quality impacts would be considered on a case-by-case basis in consultation with UDAQ, the EPA, and other Federal agencies whose lands may be impacted by the proposal.
- Project specific analyses would consider use of quantitative air quality analysis methods (i.e. modeling), when appropriate as determined by the BLM, in consultation with State, Federal and tribal entities.
- The BLM would apply a CSU stipulation throughout the Planning Area that requires the following to mitigate the impacts to air quality and greenhouse gas emissions:
- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower shall not emit more than 2 grams of NO_x per horsepower-hour.
 - All new and replacement internal combustion gas field engines of greater than 300 design-rated horsepower shall not emit more than 1 grams of NO_x per horsepower-hour.
- To mitigate any potential impact mineral development emissions may have on regional ozone formation, apply a CSU stipulation across the Planning Area that requires the following minimum standards:
 - Drill rig engines that meet Tier II or better standards, as necessary based on air quality conditions or projections, and consistent with the most stringent EPA emissions standards that are in force at the time of installation or approval.
 - Stationary internal combustion engine standard of 2g NO_x/bhp-hr for engines <300HP and 1g NO_x/bhp-hr for engines >300 HP.
 - Low bleed or no bleed pneumatic controller.
 - Dehydrator VOC emission controls to +95% efficiency.
 - Tank VOC emission controls to +95% efficiency equivalent to NSPS subpart 0000.
- Throughout the Planning Area, apply a CSU stipulation requiring a Fugitive Dust Control Plan for mineral activities that would disturb a surface area larger than 0.25 acre.
- Apply a Lease Notice across the Planning Area to inform the lessee/operator that prior to project specific approval, additional air quality analyses may be required to comply with the National Environmental Policy Act (NEPA), Federal Land Policy and Management Act, and/or other applicable laws and regulations. Analyses may include dispersion modeling for deposition and visibility impacts analysis, control equipment determinations,

and/or emission inventory development. These analyses may result in the imposition of additional project-specific air quality control measures.

- Throughout the Planning Area, apply (BMPs) to minimize dust generated from mineral activities.

3.4 CULTURAL RESOURCE MANAGEMENT

Mineral management actions developed for cultural resources include the following:

- Apply a Lease Notice throughout the Planning Area to mitigate the potential impacts to TCPs or cultural plants identified through consultation. Mitigation would be developed through further consultation with affected groups which may include measures to maintain the view shed and intrinsic values, as well as the auditory, visual, and esthetic settings of the resources.
- Apply a NSO stipulation for up to a 0.5 mile radius (immediate foreground) that is visible or audible from the following cultural sites or cultural concentration areas:
 - Upper Indian Creek (including Newspaper Rock)
 - Kane Creek Rock Art
 - Lower Kane Creek Rock Art
 - Muleshoe Canyon
 - Levi Well Rock Art
 - Highway 279
 - Seven Mile Canyon
 - Bartlett Rock Art
 - Trout Water Rock Art
 - Mill Canyon
 - Jug Rock
 - Dubinky Well
 - Upper Hell Roaring Canyon
- Apply a Lease Notice throughout the Planning Area requiring viewshed assessment for those cultural sites that receive a high degree of visitor use, or properties of traditional religious and cultural importance to an Indian Tribe.
- If the assessment shows that the mineral project would have adverse effects to the historic properties, the project may require relocation. Apply a Lease Notice to areas of high potential for cultural site occurrence informing the lessee/operator that a higher likelihood of encountering cultural resource concerns (i.e. potential adverse effects) that may require archaeological monitoring, ethnographic data collection, data recovery and mitigation of historic properties may be required to exercise lease rights.
- Apply a Lease Notice to areas of high potential for cultural site occurrence informing the lessee/operator that a higher likelihood of encountering cultural resource concerns (i.e. potential adverse effects) that may require archaeological monitoring, ethnographic data collection, data recovery and mitigation of historic properties may be required to exercise lease rights.

3.5 LANDS AND REALTY

Mineral management actions developed for Lands and realty resources include the following:

- To reduce surface use conflicts along the U.S. Highway 191 utility corridor within Moab Canyon, apply a NSO stipulation for mineral leasing.
- Apply a NSO stipulation for mineral leasing within the area of the existing Three Rivers mineral withdrawal for locatable minerals.
 - This action would further protect the riparian, wildlife, scenic, and recreation values addressed in this withdrawal by also precluding leasable mineral operations.
- Apply a CSU stipulation that would preclude the use of heavy trucks (over 20 tons) on the paved Needles Overlook Road and the Anticline Overlook Road once it is paved.
 - These improved roads provide access for recreational use in the Canyon Rims Special Recreation Management Area.
- If there is no alternative to the use of these roads, allow an exception that would require bonding in sufficient amount to repair any potential damage to the improved roads resulting from the use of heavy trucks (over 20 tons) for mineral operations.
- Apply a CSU stipulation within 1 mile of the high use filming locations listed below. This stipulation would require a visual assessment to demonstrate that the proposed mineral operations within this area do not result in long term impairment to the scenic quality from the filming location.
- These filming areas include:
 - Needles Overlook
 - Colorado River corridor and Corona Arch
 - Green River Canyon
 - Kane Creek corridor
 - Looking Glass Rock
 - View from Dead Horse Point
 - Potash Road/Shafter Basin (including Fossil Point)
 - Long Canyon
 - Highway 211 (including Newspaper Rock)
 - Highway 313
 - Monitor and Merrimac/Determination Towers/Mill Canyon
 - Gemini Bridges
 - Jewell Tibbetts Arch
 - White Wash

3.6 LANDS WITH WILDERNESS CHARACTERISTICS

Mineral management actions developed for Lands with Wilderness Characteristics resources include the following:

Apply the Baseline CSU stipulation (see Minerals Section Alternative B) to the following lands identified by the BLM as having wilderness characteristics in the 2008 RMP:

- Arches Adjacent (6,329 acres)
- Behind the Rocks (1,980 acres)
- Bridger Jack Mesa (23,056 acres)
- Dead Horse Cliffs (760 acres)
- Dome Plateau (partial, 7,124 acres)
- Fisher Towers (8,590 acres)
- Gold bar (7,215 acres)
- Gooseneck (4,345 acres)
- Hatch/Lockhart/Hart (38,802 acres)
- Hatch Wash (11,064 acres)
- Horse thief Point (8,321 acres)
- Hunter Canyon (4,589 acres)
- Indian Creek (23,148 acres)
- Labyrinth Canyon (25,283 acres)
- Lost Spring Canyon (11,433 acres)
- Negro Bill Canyon (1,268 acres)
- Shafer Canyon (1,853 acres)
- Shay Mountain (6,707 acres)
- Yellowbird (353 acres)

3.7 NATURAL AREAS

The only mineral management actions developed for management action included under the Natural Areas program within the Moab MLP is to apply a NSO stipulation for mineral leasing to lands managed as Natural Areas (429 acres, Map 2-17-A/B/C/D).

3.8 PALEONTOLOGICAL RESOURCES

Mineral management actions developed for paleontology resources include:

- Apply a CSU stipulation requiring survey and monitoring for all surface disturbing mineral activities in potential fossil yield classification (PFYC) areas 4 and 5 (118,952 acres).
- Where monitoring encounters vertebrate and vertebrate trace fossils during mineral operations, all operations must cease until the BLM Authorized Officer determines whether the site can be avoided, protected, or must be fully excavated.

3.9 RECREATION

Mineral Management actions developed for recreation uses include the following:

- Moab: Apply a NSO stipulation for mineral leasing within 0.5 miles of developed recreation sites (24,311 acres, Map 2-19-A/D). See a list of developed recreation sites, both current and planned in Appendix D of the MLP. Also, see exception, modification and waiver as specified in Appendix A of the MLP.
- Apply a NSO stipulation for mineral leasing within 0.5 miles of the centerline of the following high use routes (motorized) and trails (non-motorized) to provide visual and auditory protection to the immediate foreground (See Map 20-B/D (95,143 acres) and exception as specified in Appendix A).

- Klondike Bluffs bicycle trails
 - Bar M bicycle trails
 - Porcupine Rim trail
 - Magnificent Seven/7 Up bicycle trail systems
 - Ahab bicycle trails
 - Lower Monitor and Merrimac bike trail
 - Kokopelli's Trail
 - Hunter Canyon hiking trail
 - Metal Masher (Arth's Rim) jeep route
 - Gold Bar Rim jeep route
 - Golden Spike jeep route
 - Poison Spider jeep route
 - Cliffhanger jeep route
 - Chicken Corners jeep route
 - Top of the World jeep route
 - Moab Rim jeep route
 - Kane Creek jeep route
 - Lockhart jeep route
 - Seven Mile Rim jeep route
- Apply a NSO stipulation for a 0.5 mile radius around high use climbing and canyoneering areas (Map 2-21-B/D, 22,575 acres) to provide visual and auditory protection to the immediate foreground (Includes exception as specifies in Appendix A of the MLP):
 - Indian Creek
 - Wall Street
 - Ice Cream Parlor
 - The Tombstones of Kane Creek
 - Needle Rock
 - Cameltoe Canyon
 - Granary Canyon
 - Rock of Ages
 - Repeat Junior
 - Winter Camp Slot
 - Canyon Rims SRMA- Apply a NSO stipulation to all VRM Class II areas in the Canyon Rims SRMA, as well as to all lands on the west side of the Anticline Road (42,676 acres). This includes the VRM Class II corridor along the Needles and Anticline Overlook roads.
 - Apply a NSO stipulation to the Hatch Wash Hiking and Backpacking Focus Area (3,614 acres).
 - Apply the Baseline CSU stipulation (see Minerals Section Alternative B) throughout the remainder of the SRMA (55,230 acres).
 - Colorado Riverway SRMA Apply a NSO stipulation to the entire Colorado Riverway SRMA within the Planning Area (31,702 acres, Map 2-23-B/C/D).
 - Dolores River Canyons SRMA - Apply a NSO stipulation to the Dolores River Canyons SRMA within the Planning Area (2,872 acres, Map 2-24-B/C/D).

- Indian Creek SRMA - Apply a NSO stipulation to the Indian Creek SRMA. See Map 2-25-B/C/D (76,427 acres).
- Labyrinth Rims/Gemini Bridges SRMA - Apply a NSO stipulation to the following Focus Areas within the Planning Area (54,255 acres, Map 2-26-B/D):
 - Bar M Mountain Biking Focus Area (2,906 acres)
 - Bartlett Slickrock Freeride Mountain Bike Focus Area (166 acres)
 - Gemini Bridges/Poison Spider Mesa Focus Area (16,589 acres)
 - Goldbar/Corona Arch Hiking Focus Areas (4,773 acres)
 - Klondike Bluffs Mountain Biking Focus Area (14,597 acres)
 - Labyrinth Canyon Canoe Focus Area (6,812 acres)
 - Mill Canyon/Upper Courthouse Mountain Biking Focus Area (5,741 acres)
 - Mineral Canyon/Horse thief Point Competitive BASE Jumping Focus Area (762 acres)
 - Seven Mile Canyons Equestrian Focus Area (1,028 acres)
 - Spring Canyon Hiking Focus Area (455 acres)
 - Tusher Slickrock Mountain Biking Focus Area (428 acres)
 - Apply Baseline CSU to the remainder of the SRMA outside of the Focus Areas
- South Moab SRMA-Apply a NSO stipulation to the two Focus Areas within the SRMA (6,990 acres, Map 2-27-B/C). The Focus Areas are:
 - Behind the Rocks Hiking Focus Area (4,076 acres)
 - 24 Hours of Moab Mountain Biking Focus Area (2,914 acres)
 - Apply the Baseline CSU stipulation throughout the remainder of the SRMA outside of the Focus Areas (see Minerals Section Alternative B).

3.10 RIPARIAN RESOURCES

Mineral management actions developed for riparian resources include the following:

- Apply a NSO stipulation to preclude mineral activities within public water reserves, 100 year floodplains and within 500 feet of intermittent and perennial streams, rivers, riparian areas, wetlands, water wells, and springs (69,786 acres, Map 2-34-B/D).

3.11 SOIL AND WATER RESOURCES

Mineral Management actions developed for Soils and Water resources would include the following:

SOIL

- Saline Soils: To minimize watershed damage on saline soils which are primarily in the Mancos Shale, apply a TL stipulation for mineral leasing prohibiting surface-disturbing activities on 68,275 acres (Map 2-28-A/B2/C) of moderately to highly saline soils from December 1 to May 31. This restriction includes road construction and traffic on existing roads associated with drilling operations. Do not apply a TL within PPFAs. See Map 2-28-B1/D (49,915 acres). A TL would not be applied to PPFAs in order to allow for the practical construction and operation of the facilities.

- Apply a CSU stipulation within PPFAs requiring compensatory mitigation outside the area of impact for any surface disturbance on saline soils (18,360 acres, Map 2-29-B1/D). One acre of rehabilitation, or an amount to be determined of an equal value to the impacted resource, would be required for each acre of disturbance. Compensatory mitigation outside the area of impact could include: 1) reclamation of non-designated roads and 2) planting and seeding in appropriate areas to improve soil condition.
- Due to the difficulty of reclaiming saline soils, apply a CSU stipulation requiring compensatory mitigation outside the area of impact for any surface disturbance on saline soils (68,348 acres, Map 2-30-B/C/D). One acre of rehabilitation, or an amount to be determined of an equal value to the impacted resource, would be required for each acre of disturbance. Compensatory mitigation outside the area of impact could include: 1) reclamation of non-designated roads and 2) planting and seeding in appropriate areas to improve soil condition.
- Apply BMPs for soils (Appendix B of MLP).
- Throughout the Planning Area, apply BMPs to reduce fugitive dust emissions (see Appendix B of MLP).
- Slopes over 21 percent should be avoided wherever possible.
- Apply a CSU stipulation for activities on slopes over 21 percent (181,119 acres, Map 2-32-B/D). This stipulation would require an erosion control plan approved by the BLM prior to construction and maintenance. The plan would include the following: 1) an erosion control strategy and 2) a BLM accepted survey and design.

WATER

- BLM would take appropriate actions to maintain water quality by working with the Utah Division of Water Quality and other agencies in accordance with the MOU regarding implementing the nonpoint source water quality program in the State of Utah. This MOU addresses the development of monitoring data and BMPs to protect water resources.
- The BLM would meet State and Federal water quality standards, including designated beneficial uses and anti-degradation requirements. Apply BMPs for water provided in Appendix B, including those for potash processing facilities.
- Apply an NSO stipulation to Drinking Water Source Protection Zones (Groundwater Protection Zones) 1, 2, and 3, and 4 as defined by the Utah Division of Drinking Water (17,362 acres, Map 2-33-B/C/D). This stipulation would include a requirement for not penetrating the water bearing geologic units (aquifer) within the protection zone where horizontal and directional drilling is conducted from areas outside the NSO. This stipulation would also include a requirement for adequate well construction, completion, and abandonment where horizontal and directional drilling is conducted from areas adjacent to the NSO area so that source water is not impacted.
- Apply an NSO stipulation to preclude mineral activities within 100 feet of ephemeral streams (58,545 acres, Map 2-35-B/D).
- Currently the Colorado River and Fisher Creek are the only water bodies in the Planning Area that are determined to be impaired and not meeting State water quality standards.
- Apply an NSO stipulation to preclude mineral activities within 750 feet of the Colorado River and Fisher Creek (4,590 acres, Map 2-36-B/D).

- Apply BMPs to drilling operations for the protection of surface and groundwater resources (Appendix B).
- To protect the Courthouse Wash Watershed (51,790 acres, Map 2-37-B/D), an important recharge area for the unique ecological system within Arches National Park, apply the baseline CSU stipulation (see Minerals Section Alternative B) to limit the amount of drilling within the groundwater recharge area.
- Apply an additional CSU stipulation to the Courthouse Watershed that requires the use of closed loop drilling, the use of tanks for produced water or backflow water, and a water monitoring plan. Monitoring will occur prior to, during, and after anticipated mineral development to detect impacts on both surface water and groundwater resources.
- To protect the Salt Wash Watershed, an important watershed which drains through Arches National Park (61,925 acres, Map 2-38-B/D), apply the Baseline CSU stipulation (see Minerals Section Alternative B) to limit the amount of drilling within the watershed.
- Apply an additional CSU stipulation to the Salt Wash Watershed that requires the use of closed loop drilling, the use of tanks for produced water or backflow water, and a water monitoring plan. Monitoring will occur prior to, during, and after anticipated mineral development to detect impacts on both surface water and groundwater resources.
- Apply a CSU stipulation to identified spring areas requiring a hydrologic assessment prior to conducting any mineral operations (38,056 acres, Map 2-39-B/D). The hydrologic assessment would include a description of the geology and potentially affected aquifers and springs along with a drilling plan that demonstrates how water resources would be protected. This stipulation would also require a water monitoring plan. Monitoring will occur prior to, during, and after anticipated mineral development to detect impacts on springs.
- Apply BMPs for the protection of shallow aquifers and potential unconsolidated aquifers.
- Apply an NSO stipulation to preclude mineral activities within public water reserves, 100 year floodplains and within 500 feet of intermittent and perennial streams, rivers, riparian areas, wetlands, water wells, and springs (69,786 acres, Map 2-34-B/D).

3.12 SPECIAL DESIGNATIONS

Mineral Management actions developed for Special Designation areas include the following:

Areas of Critical Environmental Concern- ACEC

- Apply a NSO stipulation to the Behind the Rocks ACEC (3,911 acres, Map 2-40-A/B/D).
- Close Shafer Basin portion of the Highway 279/Shافر Basin/Long Canyon ACEC to mineral leasing (8,566 acres, Map 2-41-D).
- Apply a NSO stipulation to the Highway 279 and Long Canyon portions of the Highway 279/Shافر Basin/Long Canyon ACEC to mineral leasing (4,060 acres, Map 2-41-D).
- Close the Indian Creek ACEC to mineral leasing (3,894 acres, Map 2-42-C/D).
- Apply a NSO stipulation to the Lavender Mesa ACEC (649 acres, Map 2-43-A/B/C).
- Apply a NSO stipulation to the Shay Canyon ACEC (119 acres, Map 2-44-A/B/D).

- Apply a NSO stipulation to the Ten Mile Wash ACEC (4,988 acres, Map 2-45-A/B/D).

National Historic Trails- Old Spanish National Historic Trail (OSNHT) and Scenic Back ways and Byways

- In order to protect the integrity of viewsheds in scenic and cultural landscapes along the Old Spanish National Historic Trail, apply a CSU stipulation to high potential sites and segments along the OSNHT. The CSU would apply to a 2 mile radius of high potential sites along and the OSNHT, as well as a 2 mile width on the south side of the Blue Hills high potential segment. The CSU would require the lessee to maintain the moderate setting of the trail at these locations based on a visual assessment.
- Apply a NSO stipulation to the mapped viewsheds of Scenic Backways and Byways designated by the State of Utah. This stipulation shall not exceed 1 mile from centerline (156,067 acres, Map 2-58-B/D).
 - These scenic corridors include: Utah Highway 128, Highway 211, Highway 279, Highway 313, the Needles Overlook Road, the Anticline Overlook Road, and the Lockhart Basin Road (including the Kane Creek Road).

Wild and Scenic Rivers

- Apply a NSO stipulation to the suitable Wild and Scenic River segments along the Colorado and Green Rivers with the exception of Colorado River segment 3 in Monticello (19,347 acres, Map 2-47-A/B/D).
- Close Monticello WSR Segment 3 along the Colorado River to mineral leasing (753 acres, Map 2-48-A/B/C/D).

3.13 SPECIAL STATUS SPECIES (*THREATENED, ENDANGERED, AND SENSITIVE*)

Mineral Management actions developed for special status species and their habitats include the following:

- Manage Special Status Species according to the entire set of decisions in the Moab and Monticello RMPs. Specific decisions regarding species found in the Moab MLP Planning Area are reiterated below with the exception of the Yellow-billed Cuckoo that has been listed since the 2008 RMP. The USFWS has provided updated management recommendation that are incorporated below and in the Section 4.0 Lease Notices.
- Raptor management would be guided by the use of Best Management Practices for Raptors and Their Associated Habitats in Utah, August 2006 MLP Draft Appendix E "Best Management Practices for Raptors and Their Associated Habitats in Utah", utilizing seasonal and spatial buffers, as recommend by the Utah Field Office of the USFWS (Romin 2002), as well as mitigation, to maintain and enhance raptor nesting and foraging habitat, while allowing other resource uses. Breeding season surveys would be required.
- During nesting season for migratory birds (April–July 30, as recommended by the Utah Field Office of the USFWS), avoid or minimize surface disturbing activities and vegetative-altering projects and broad-scale use of pesticides in identified occupied priority migratory bird habitat. Breeding season surveys may be required.

- Threatened and endangered species conservation measures and lease notices developed in consultation with USFWS would be used for all surface-disturbing activities to comply with the Endangered Species Act, and the BLM Manual 6840, Special Status Species Management. These species include: California condor, Mexican spotted owl, southwestern willow flycatcher, Yellow-billed cuckoo, bonytail, Colorado pikeminnow, humpback chub, razorback sucker, and Jones Cycladenia.
- Apply a CSU stipulation in habitat for BLM sensitive plants (61,591 acres, Map 2-53-B/C/D) requiring operators to conduct a survey and avoid these plants. The plant habitats requiring surveys are: Alcove rock daisy, Canyonlands lomatium, Cisco milkvetch, Entrada rushpink, Jane's globemallow, Paradox breadroot, Stage Station milkvetch, and Trotter's oreopsis.
- Manage Special Status Species according to the entire set of decisions in the Moab and Monticello RMPs. Specific decisions regarding species found in the Moab MLP Planning Area are reiterated below with the exception of the Yellow-billed Cuckoo that has been listed since the 2008 RMP. The USFWS has provided updated management recommendation that are incorporated below and in the Section 4.0 Lease Notices.

The Moab and Monticello RMPs decisions that relate to Special Status Species include the following:

- The protection of habitat for listed and non-listed plant and animal species would be considered prior to authorizing any actions that could alter or disturb such habitat.
- Surveys of habitat or potential habitat for special status species (including any sensitive species under consideration for formal designation as T&E) would be made prior to taking any action that could affect these species. Surveys would be conducted using protocols established for potentially affected species.
- BLM would conduct or cooperate in surveys to determine the extent of listed and non-listed plant and animal species and their habitat or potential habitat. Any listed or non-listed special status species survey must be conducted by qualified biologists, botanists, or ecologists that have been approved by the BLM.
- Monitoring, using approved protocol, would be required on listed and non-listed special status species habitat that may be affected by BLM authorization of any activities within that habitat.
- Support and implement special status plant and animal Species Management Plans. Coordinate actions with UDWR and other involved entities. Support population and habitat monitoring.
- Support and implement current and future special status plant and animal species Conservation Plans, Strategies, and Agreements. Coordinate actions with USFWS and other involved entities. Support population and habitat monitoring.
- Mitigate all unavoidable habitat losses for special status species as required by policy or law.
- Avoid construction of new roads within listed and non-listed special status plant and animal species habitats.

- Apply lease notices for listed plant and animal species as determined by Section 7 consultation between BLM and USFWS.
- Develop cooperative agreements with other agencies or entities to inventory and/or monitor existing or potential habitat for listed and non-listed special status plant and animal species.
- Plan and implement assessment and monitoring plans for T&E and BLM Sensitive species.
- Coordinate with USFWS and UDWR to allow for the reintroduction of T&E and BLM Sensitive species into historic or suitable range. These reintroductions would be analyzed with site-specific NEPA.
- Allow translocations and population augmentation of special status species to aid in conservation and recovery efforts. Implement necessary habitat manipulations and monitoring to ensure successful translocation efforts.

All surface disturbing activities are subject to BLM Standard Lease Terms (STL). STL include the restrictions that are required for proposed actions in order to protect special status species and to comply with the Endangered Species Act. STL leasing allows for relocation of proposed operations up to 660 feet or delay operations for a period not to exceed 60 days. These STL provide the BLM addition discretion to accommodate specific needs of Special Status Species.

The Cisco milkvetch (*Astragalus sabulosus*) and the Isely milkvetch (*Astragalus isleyi*) are both petitioned BLM state sensitive plant species that the Service determined in their 90 day findings to have substantial information indicating that the petition action may be warranted and therefore both species are currently under status review.

The Service has provided avoidance and minimization measures that should be considered during project development and are listed below. As sensitive species, these plants and their habitats are afforded protection by RMP decisions (incorporated into the MLP) that require the BLM to ensure habitat evaluation and appropriate occupancy surveys are executed prior to authorizing any actions that could alter or disturb their habitat and provide needed monitoring. The STL will allow the BLM, at our discretion, to move a well site up to 200 meter (660 feet) or delay operations up to 60 days, therefore the combination of RMP decisions and the STL will allow the BLM to implement these recommended avoidance and minimization measures for the life of the plan. If these species become federally listed these avoidance and minimization measures will then be incorporated into lease notices that provide the potential leasee with additional information on potential ESA species that may occur on the lease. The BLM would then consult when proposed project occurs in suitable habitats and if the species was located in the Moab or Monticello FO.

Cisco Milkvetch Avoidance and Minimization Measures

Potential habitat - areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

Suitable habitat - areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Cisco milkvetch; habitat descriptions can be found in NatureServe links at <http://explorer.natureserve.org/>.

Occupied habitat - areas currently or historically known to support Cisco milkvetch; synonymous with "known habitat."

The following avoidance and minimization measures should be included in the plan of development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Cisco milkvetch habitat is present.
2. Species surveys will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, 300 foot buffers will be maintained between surface disturbance and avoidance areas. Where conditions allow, surveys:
 - a) Will be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols (USFWS 2011);
 - b) Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 15th to May 31st; however, surveyors should verify that the plant is flowering by contacting a BLM or Service botanist or demonstrating that the nearest known population is in flower);
 - c) Will occur within 300 feet from the edge of the proposed right-of-way and/or project disturbance for surface pipelines, roads, well pads, and other facilities requiring removal of vegetation;
 - d) Will include, but not be limited to, plant species lists and habitat characteristics, and;
 - e) Will be valid until April 15th of the following year.
 - f) Clearance surveys in occupied habitat will be combined with historic plant location data for that particular site to delineate the outer boundary of occupied habitat. The 300 foot avoidance buffer will then be applied to the outer boundary of occupied habitat for that site. This evaluation will occur in coordination with the BLM and Service to ensure that the appropriate buffer is applied to protect both active and dormant Cisco milkvetch plants in occupied habitat.
 - g) Electronic copies of clearance survey reports (included appendices) and GIS shape files will be sent no later than December 31st to each of the following:
 - Utah Natural Heritage Program (with copies of NHP field survey forms);
 - Applicable/affected land owners and/or management agencies; and
 - U.S. Fish and Wildlife Service Utah Field Office (mailing address: 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119).
3. Design project infrastructure to minimize impacts within suitable habitat:
 - a) Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300 foot buffers;
 - b) Reduce well pad size to the minimum needed, without compromising safety;
 - c) Where technically and economically feasible, use directional drilling or multiple wells from the same pad;
 - d) Limit new access routes created by the project;
 - e) Roads and utilities should share common right-of ways where possible;
 - f) Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat;
 - g) Place signing to limit off-road travel in sensitive areas;
 - h) Stay on designated routes and other cleared/approved areas;
 - i) All disturbed areas will be revegetated with species native to the region, or seed mixtures approved by the action agency.

4. Where there is occupied habitat, project infrastructure will be designed to avoid direct disturbance and indirect impacts to populations and to individual plants:
 - a) Follow the above recommendations (#3, above) for project design within suitable habitats;
 - b) To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged;
 - c) Construction of roads will occur such that the edge of the right of way is at least 300 feet from: (1) any plant; (2) the outer boundary of occupied habitat; and (3) avoidance areas;
 - d) Existing roads will be graveled within 300 feet of occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to May 31st (flowering period); dust abatement applications will be comprised of water only;
 - e) The edge of the well pad should be located at least 300 feet away from plants and avoidance areas, in general;
 - f) Surface pipelines will be laid such that a 300 foot buffer exists between the edge of the right of way and plants and 300 feet between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population;
 - g) Construction activities will not occur within occupied habitat;
 - h) Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.;
 - i) A qualified botanist will be on site during construction to monitor the surface disturbance activity and assist with implementation of applicable conservation measures (USFWS 2011);
 - j) Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat; and
 - k) Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
5. For projects that cannot implement the measures or avoidance buffers identified in #4, above, site specific conservation measures will be developed in coordination with the Service. Occupied Cisco milkvetch habitats within: (1) 300 ft of the edge of the surface pipeline right of ways; (2) 300 ft of the edge of the road right of ways; and (3) 300 ft from the edge of the well pads shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.
6. Coordination with the Service will be sought immediately if any loss of plants or occupied habitat for the Cisco milkvetch is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in coordination with the BLM and the Service.

Isley Milkvetch Avoidance and Minimization Measures

Potential habitat - areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

Suitable habitat - areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Isley milkvetch; habitat descriptions can be found in the book, *A Utah Flora* by Stanley Welsh et al. 2008.

Occupied habitat - areas currently or historically known to support Isley milkvetch; "known habitat"

The following avoidance and minimization measures should be included in the plan of development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Isley milkvetch habitat is present.
2. Species surveys will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, 300 foot buffers will be maintained between surface disturbance and avoidance areas. Where conditions allow, surveys:
 - a) Will be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols (USFWS 2011);
 - b) Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually March 1st to April 30th; however, surveyors should verify that the plant is flowering by contacting a BLM or Service botanist or demonstrating that the nearest known population is in flower);
 - c) Will occur within 300 feet from the edge of the proposed right-of-way and/or project disturbance for surface pipelines, roads, well pads, and other facilities requiring removal of vegetation;
 - d) Will include, but not be limited to, plant species lists and habitat characteristics, and;
 - e) Will be valid until March 1st of the following year.
 - f) Clearance surveys in occupied habitat will be combined with historic plant location data for that particular site to delineate the outer boundary of occupied habitat. The 300 foot avoidance buffer will then be applied to the outer boundary of occupied habitat for that site. This evaluation will occur in coordination with the BLM and Service to ensure that the appropriate buffer is applied to protect both active and dormant Isley milkvetch plants in occupied habitat.
 - g) Electronic copies of clearance survey reports (included appendices) and GIS shape files will be sent no later than December 31st to each of the following:
 - Utah Natural Heritage Program (with copies of NHP field survey forms);
 - Applicable/affected land owners and/or management agencies; and
 - U.S. Fish and Wildlife Service Utah Field Office (mailing address: 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119).
3. Design project infrastructure to minimize impacts within suitable habitat:
 - a) Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300 foot buffers;
 - b) Reduce well pad size to the minimum needed, without compromising safety;
 - c) Where technically and economically feasible, use directional drilling or multiple wells from the same pad;
 - d) Limit new access routes created by the project;
 - e) Roads and utilities should share common right-of ways where possible;
 - f) Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat;
 - g) Place signing to limit off-road travel in sensitive areas;
 - h) Stay on designated routes and other cleared/approved areas;
 - i) All disturbed areas will be revegetated with species native to the region, or seed mixtures approved by the action agency.

4. Where there is occupied habitat, project infrastructure will be designed to avoid direct disturbance and indirect impacts to populations and to individual plants:
 - a) Follow the above recommendations (#3, above) for project design within suitable habitats;
 - b) To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged;
 - c) Construction of roads will occur such that the edge of the right of way is at least 300 feet from: (1) any plant; (2) the outer boundary of occupied habitat; and (3) avoidance areas;
 - d) Existing roads will be graveled within 300 feet of occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from usually March 1st to April 30th (flowering period); dust abatement applications will be comprised of water only;
 - e) The edge of the well pad should be located at least 300 feet away from plants and avoidance areas, in general;
 - f) Surface pipelines will be laid such that a 300 foot buffer exists between the edge of the right of way and plants and 300 feet between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population;
 - g) Construction activities will not occur within occupied habitat;
 - h) Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.;
 - i) A qualified botanist will be on site during construction to monitor the surface disturbance activity and assist with implementation of applicable conservation measures (USFWS 2011);
 - j) Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat; and
 - k) Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
5. For projects that cannot implement the measures or avoidance buffers identified in #4, above, site specific conservation measures will be developed in coordination with the Service. Occupied Isley milkvetch habitats within: (1) 300 ft of the edge of the surface pipeline right of ways; (2) 300 ft of the edge of the road right of ways; and (3) 300 ft from the edge of the well pads shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.
6. Coordination with the Service will be sought immediately if any loss of plants or occupied habitat for the Isley milkvetch is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in coordination with the BLM and the Service.

Colorado River Endangered Fish (Endangered) - No surface-disturbing activities within the 100-year floodplain of the Colorado River, Green River, and associated back waters would be allowed. Any exceptions to this requirement would require consultation with the USFWS.

Restrictions on surface disturbance within this critical habitat would be developed through this consultation process (19,198 acres, Map 2-49-A/B/C/D).

- Water depletions from any portions of the Upper Colorado River drainage basin are considered to adversely affect and adversely modify the critical habitat of the endangered fish species (bonytail, Colorado pikeminnow, humpback chub, and razorback sucker). Section 7 consultation would be completed with the U.S. Fish and Wildlife Service prior to any such water depletions.

Mexican Spotted Owl (Threatened) - If the BLM determines that a proposed action may affect Mexican spotted owl or its habitat, consultation with the USFWS would be initiated.

- Protect occupied and potential habitat, including designated critical habitat for the Mexican spotted owl (175,304 acres, Map 2-50-A/B/C/D), precluding temporary activities within designated critical habitat from March 1 through August 31. Permanent actions are prohibited year-round within 0.5 miles of a PAC.

Southwestern Willow Flycatcher (Threatened) - If BLM determines that a proposed action may affect southwestern willow flycatcher or its habitat, consultation with USFWS would be initiated.

- Protect southwestern willow flycatcher and their habitat by precluding surface-disturbing activities within a 100-meter buffer of suitable habitat year long. Activities within 0.25 miles of occupied breeding habitat would not occur during the breeding season, April 15th through August 15 (12,155 acres, Map 2-51-A/B/C/D).

Yellow-billed Cuckoo (Threatened) - If BLM determines that a proposed action may affect the yellow-billed cuckoo or its habitat, consultation with the USFWS would be initiated.

- Protect the yellow-billed cuckoo and its habitat by precluding surface-disturbing activities within 0.25-miles of occupied habitat within riparian areas from June 1 through August 31 (12,155 acres, Map 2-52-A/B/C/D).

Jones Cycladenia (Threatened) - If BLM determines that a proposed action may affect the Jones Cycladenia or its habitat, consultation with the USFWS would be initiated

- Preclude surface-disturbing activities within 300 feet of plants, occupied habitat (includes areas historically known to support Jones cycladenia) and suitable habitats. (12,155 acres, Map 2-52-A/B/C/D).

3.14 VEGETATION

Mineral Management actions developed for vegetation resources may include the following:

- For extreme (D3) and exceptional (D4) drought, apply BMPs to reduce dust production. Apply the Baseline CSU stipulation (see Minerals section Alternative B) to minimize impacts in sagebrush/steppe habitat in areas with moderately high to very high ecological intactness (11,269 acres, Map 2-54-B/D).
- Apply a CSU stipulation within PPFAs requiring compensatory mitigation outside the area of impact for any surface disturbance within sagebrush steppe habitat in areas with

low to moderately low ecological intactness (8,781 acres, Map 2-55-B1/D). One acre of rehabilitation, or an amount to be determined of an equal value to the impacted resource, would be required for each acre of disturbance.

- Apply BMPs to further minimize impacts to sagebrush/steppe habitat including compensatory mitigation measures outside the area of impact (Appendix B).
- Apply BMPs from Appendix B for reclamation, soils and noxious weeds. These BMPs include requirements for seeding to improve soil stabilization or to prevent noxious or invasive weed species.
- Apply BMPs from Appendix B to control noxious weeds and invasive species.

3.15 VISUAL/AUDITORY RESOURCE MANAGEMENT

Mineral management actions developed for Visual/ Auditory resources include the following:

Visual Resources

- Apply the Baseline CSU stipulation (see Minerals section Alternative C) to Visual Resource Inventory (VRI) Class II areas within the Moab Field Office that are managed as VRM Class III (146,960 acres, Map 2-56-B/C/D).
- Close all VRM Class I areas to mineral leasing. (13,417 acres, Map 2-57-C/D).
- Apply a NSO stipulation to all VRM Class II areas (324,721 acres, Map 2-59-B/C/D).
- Close the immediate viewshed from Arches National Park to mineral leasing. The viewshed is defined as the BLM acreage surrounding Arches National Park that is managed as VRM Class II (47,167 acres, Map 2-60-C) and/or inventoried as VRI Class II (65,349 acres, Map 2-60-C).
- Apply an NSO stipulation to the viewshed on the northern side of Arches National Park that is outside the VRI Class II areas (34,243 acres, Map 2-60-C).

These stipulations would provide a visual buffer for the National Parks. Also, apply BMPs in Appendix B for visual resources.

- Close the VRM Class II areas on the northern boundary of Canyonlands National Park to mineral leasing (8,358 acres, Map 2-61-C/D)
- Apply an NSO stipulation to the viewshed from the northern boundary of Canyonlands National Park that is outside the VRM Class II area (3,800 acres, Map 2-61-C/D).
- Close BLM lands to mineral leasing along the entire eastern boundary of Canyonlands National Park for a distance of 3 miles to protect the foreground viewshed from the Park boundary (67,280 acres, Map 2-61-C/D).
- Minimize flaring of gas.
- Limit the use of artificial lighting during nighttime operations to only those that are determined necessary for safety.
- Utilize shielding and aiming techniques as well as limiting the height of light poles to reduce glare and avoid light shining above horizons.

- Direct lights downward onto the task area. The bottom surface of the light fixture should be level, or if unable to be fully level, point it as close to straight down as possible or shield it to avoid light being projected horizontally.
- Use motion sensors, timers, or manual switching for areas that require illumination but are seldom occupied.
- Reduce lamp brightness and select lights that are not broad spectrum or bluish in color.

Auditory Resources

- Apply BMPs to mitigate noise associated with mineral operations.
- Based on noise modelling, apply a CSU stipulation within 6.1 miles (9,800 meters) of National Parks that requires the following measures (369,519 acres, Map 2-63-C/D).
- Noise mitigation efforts would be implemented with a maximum decibel level of 51 decibels for production (measured at 350 feet from the source). This sound level could be achieved by replacement diesel engine exhaust silencers (mufflers), noise barriers, and other noise control measures. See *Aesthetic and Noise Control Regulations Colorado Oil and Gas Conservation Commission*.
- Apply a NSO stipulation to areas located within 2.8 miles (based on noise modeling) of National Park boundaries in order to further reduce auditory impacts from mineral operations to backcountry portions of Arches and Canyonlands National Parks (166,099 acres, Map 2-64-C).

3.16 WILDLIFE AND FISHERIES

Mineral management actions developed for Wildlife and Fisheries resources management actions include the following:

Raptors and Migratory Birds:

- Raptor management would be guided by the use of Best Management Practices for Raptors and Their Associated Habitats in Utah, August, 2006 MLP Draft Appendix E "Best Management Practices for Raptors and Their Associated Habitats in Utah"), utilizing seasonal and spatial buffers, as recommend by the Utah Field Office of the USFWS (Romin 2002), as well as mitigation, to maintain and enhance raptor nesting and foraging habitat, while allowing other resource uses.
- During nesting season for migratory birds (April 1–July 31), avoid or minimize surface disturbing activities and vegetative-altering projects and broad-scale use of pesticides in identified occupied priority migratory bird habitat. Breeding season surveys may be required.

Pronghorn Habitat:

- Protect pronghorn fawning habitat by applying a TL stipulation that would preclude surface-disturbing activities from May 1 to June 15 (99,744 acres, Map 2-66-A/B2).
- This stipulation would not apply to PPFAs. See Map 2-66-B1/D, 85,639 acres.
- Within PPFAs, apply a CSU stipulation for compensatory mitigation outside the area of impact within pronghorn habitat. Water development, habitat improvements, and other

applicable measures adequate to compensate for the loss of pronghorn habitat would be required when production facilities are constructed (14,105 acres).

- Apply BMPs for the protection of pronghorn during mineral activities.

Desert Bighorn Sheep Habitat:

- Lockhart Basin desert bighorn sheep herd: Within desert bighorn sheep lambing and rutting areas for the Lockhart desert bighorn sheep herd (55,561 acres), apply a TL stipulation where no surface-disturbing activities or occupancy are allowed from April 1 through June 15 for lambing and from October 15 through December 15 for rutting. This includes the 9,237 acres of habitat along the rim of Hatch Point (64,798 acres, Map 2-65-A/B/C/D).
- To protect lambing and rutting habitat, apply a CSU stipulation for mineral leasing (107,220 acres, Map 2-67-B/D). This CSU stipulation would preclude drilling operations and permanent facilities but, under specific circumstances, would allow for road and pipeline construction, and geophysical exploration outside of lambing and rutting periods.
- Within PPFAs, apply a CSU stipulation for compensatory mitigation outside the area of impact within desert bighorn sheep habitat.
- Water development, habitat improvements, and other applicable measures adequate to compensate for the loss of bighorn sheep habitat would be required when production facilities are constructed (9,875 acres, Map 2-67-B1/D).
- Apply the Baseline CSU stipulation (see Minerals section Alternative B) to desert bighorn sheep habitat, except for a small portion located within the PPFAs (247,127 acres).

Deer and Elk Habitat:

- Based on new data from UDWR, protect deer and elk crucial winter habitat by applying a TL stipulation where no surface-disturbing activities may occur from November 15 through April 15 (125,995 acres, Map 2-68-B/D).
- Within deer fawning and elk calving grounds apply a TL where no surface-disturbing activities may occur from May 15 through June 30 (8,354 acres, Map 2-68-B/D).
- Apply the Baseline CSU stipulation (see Minerals section Alternative B) throughout deer and elk crucial winter habitat.

Big Game Animal Habitat:

- Apply BMPs including those utilizing compensatory mitigation outside the area of impact (Appendix B) to minimize impacts to wildlife, as well as the potential for a decrease in wildlife habitat function.

4.0 LEASING NOTICES

The following species specific leasing notices have been developed in coordination with the Service. These lease notices along with all other lease notices and stipulations are also included in Appendix A of the Moab MLP and would apply to both oil and gas leasing and potash leasing. The stipulations also apply to geophysical exploration.

California condor

The lessee/operator is given notice that the lands located in this parcel contain potential habitat for the California condor. Avoidance or use restrictions may be placed on portions on areas known or suspected to be used by condors. Application of appropriate measures would depend on whether the action is temporary or permanent, and whether it occurs within or outside potential habitat. A temporary action is completed prior to the following important season of use, leaving for habitat functionality. A permanent action continues for more than one season of habitat use, and/or causes a loss of condor habitat function or displaces condors through continued disturbance (i.e., creation of a permanent structure requiring repetitious maintenance or emits disruptive levels of noise).

Current avoidance and minimization measures include the following:

1. The Peregrine Fund will be contacted early and throughout project design and implementation to determine and monitor the locations and status of California condors in or near the project area.
2. Surveys would be required prior to operations in suitable habitat, unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s) approved by the BLM and must be conducted according to protocols consulted on with FWS.
3. All workers will be informed about potential condor presence.
4. If condors are present within the project area the Peregrine Fund will be contacted. If there is any potential that the project will affect condors, the USFWS will be contacted immediately;
5. The project area will be kept clean (e.g., trash disposed of, tools and materials picked up) in order to minimize the possibility of condors accessing inappropriate materials;
6. To prevent water contamination and potential condor poisoning, a hazardous material (including vehicle fluids) leakage and spill plan will be developed and implemented. The plan will include provisions for immediate clean-up of any hazardous substance, and will outline how each hazardous substance will be treated in case of leakage or spill. The plan will be reviewed by the district biologist to ensure condors are adequately addressed.
7. If surveys result in positive identification of condor use, all lease activities would require monitoring throughout the duration of the project to ensure desired results of applied mitigation and protection. Minimization measures would be evaluated during development and, if necessary, Section 7 consultation may be reinitiated.
8. Temporary activities within 1.0 mile of nest sites would not occur during the breeding season.
9. Temporary activities within 0.5 miles of established roosting sites or areas would not occur during the season of use, which is from August 1 to November 30, unless the area has been surveyed according to protocols consulted on with FWS and determined to be unoccupied.

10. No permanent infrastructure would be placed within 1.0 mile of nest sites.
11. No permanent infrastructure would be placed within 0.5 miles of established roosting sites or areas.
12. Remove big game carrion to 100 feet from on lease roadways occurring within foraging range.
13. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
14. Re-initiation of Section 7 consultation with the USFWS would be sought immediately if mortality or disturbance to California condors is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures would be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.

Additional measures may also be employed to avoid or minimize effects to the species between the lease sale and lease development stages. These additional measures would be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.

Mexican Spotted Owl

The lessee/operator is given notice that the lands in this parcel contain suitable or designated Critical Habitat for MSO. In order to protect MSO habitat and avoid negative impacts to the species, actions would be avoided or restricted that may cause stress and disturbance during nesting and rearing of their young. Appropriate measures would depend on whether the action is temporary or permanent and whether it occurs within or outside the owl nesting season. A temporary action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of owl habitat or displaces owls through disturbances (i.e., creation of a permanent structure). Current avoidance and minimization measures include the following:

Surveys would be required prior to implementation of the proposed action. All surveys must be conducted by qualified individual(s) acceptable to the BLM. Assess habitat suitability for both nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the conservation measures below if project activities occur within 0.5 mile of suitable owl habitat. Determine potential effects of actions to owls and their habitat. Document type of activity, acreage and location of direct habitat impacts, type and extent of indirect impacts relative to location of suitable owl habitat.

Document if action is temporary or permanent. Activities may require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures would be evaluated, and, if necessary, Section 7 consultation reinitiated. Any activity that

includes water production should be managed to ensure maintenance of enhancement of riparian habitat. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in canyon habitat suitable for MSO nesting.

For all temporary actions that may impact owls or suitable habitat:

1. If the action occurs entirely outside of the owl breeding season from March 1 through August 31, and leaves no permanent structure or permanent habitat disturbance, the action can proceed without an occupancy survey.
2. If the action would occur during a breeding season, a survey for owls is required prior to commencing the activity. If owls are found, the activity should be delayed until outside of the breeding season.
3. Rehabilitate access routes created by the project through, such means as raking out scars, re-vegetation, gating access points, etc.

For all permanent actions that may impact owls or suitable habitat:

1. Survey two consecutive years for owls, according to accepted protocol prior to commencing activities.
2. If owls are found, no disturbing actions would occur within 0.5 miles of an identified site. If nest site is unknown, no activity would occur within the designated current and historic Protected Activity Center (PAC).
3. Avoid permanent structures within 0.5 mile of suitable habitat unless surveyed and not occupied.
4. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims. Placement of permanent noise generating facilities should be contingent upon a noise analysis to ensure noise does not encroach upon a 0.5-mile buffer for suitable habitat, including canyon rims.
5. Limit disturbances to and within suitable habitat by staying on designated and/or approved routes.
6. Limit new access routes created by the project.
7. Modifications to the Surface Use Plan of Operations may be required in order to protect the MSO and/or habitat in accordance with Section 6 of the lease terms, the ESA, and the regulations at 43 Code of Federal Regulations (CFR) 3101.1-2.

Southwestern Willow Flycatcher

The lessee/operator is given notice that the lands in this parcel contains riparian habitat within the range for southwestern willow flycatcher. In order to protect southwestern willow flycatcher habitat and avoid negative impacts to the species, actions would be avoided or restricted that may cause stress and disturbance during nesting and rearing of their young. Appropriate measures would depend on whether the action is temporary or permanent, and whether it occurs within or outside the nesting season. A temporary action is completed prior to the

following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of habitat or displaces flycatchers through disturbances, i.e., creation of a permanent structure. Current avoidance and minimization measures include the following:

1. Surveys would be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s) and be conducted according to protocol.
2. Activities would require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures would be evaluated and, if necessary, Section 7 consultation reinitiated.
3. Water production would be managed to ensure maintenance or enhancement of riparian habitat.
4. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
5. Activities would maintain a 300 feet buffer from suitable riparian habitat year long.
6. Activities within 0.25 mile of occupied breeding habitat would not occur during the breeding season of April 15 to August 15.
7. Ensure that water extraction or disposal practices do not result in change of hydrologic regime that would result in loss or degradation of riparian habitat.
8. Re-vegetate with native species all areas of surface disturbance within riparian areas and/or adjacent land.
9. Avoid loss or disturbance of riparian habitats.

Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the USFWS between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

Yellow-billed cuckoo

The lessee/operator is given notice that the lands in or adjacent to this parcel contain potentially suitable habitat that falls within the range for western yellow-billed cuckoo, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend whether the action is temporary or permanent, and whether it occurs within or outside the breeding and nesting season. A temporary action is completed prior to the following breeding season, leaving no permanent structures and resulting in no permanent habitat loss. A permanent action could continue for more than one breeding season and/or cause a loss of habitat or (12,155 acres) displace western yellow-billed cuckoos through disturbances (e.g., generation of noise between June 15 and August 31). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act. Integration of and adherence to these measures will facilitate review and analysis of any submitted permits under the authority

of this lease. Following these measures could reduce the scope of Endangered Species Act, Section 7 consultation at the permit stage. Avoidance and minimization measures include the following:

1. Habitat suitability within the parcel and/or within a 0.5-mile buffer of the parcel will be identified prior to lease development to identify potential survey needs. Habitat suitability should be determined in accordance with Guidelines for the identification of suitable habitat for WYBCU in Utah (Utah Field Office, 2015).
2. Protocol Breeding Season Surveys will be required in suitable habitats prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by permitted individual(s), and be conducted according to protocol.
3. For all temporary actions that may impact cuckoo or suitable habitat:
 - a. If action occurs entirely outside of the cuckoo breeding season (June 1 – Aug 31), and leaves no structure or habitat disturbance, action can proceed without a presence/absence survey.
 - b. If action is proposed between June 1 and August 31, presence/absence surveys for cuckoo will be conducted prior to commencing activity. If cuckoo are detected, activity should be delayed until September 1.
 - c. Eliminate access routes created by the project through such means as raking out scars, revegetation, gating access points, etc.
4. For all permanent actions that may impact cuckoo or suitable habitat:

Protocol level surveys by permitted individuals will be conducted prior to commencing activities.

- a. If cuckoos are detected, no activity will occur within 0.25 mile of occupied habitat.
 - b. Avoid drilling and permanent structures within 0.25 mile of suitable habitat unless absence is determined according to protocol level surveys conducted by permitted individual(s).
 - c. Ensure noise levels at 0.25 mile from suitable habitat do not exceed baseline conditions. Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a 0.25 mile buffer for suitable habitat.
5. Temporary or permanent actions will require monitoring throughout the duration of the project to ensure that western yellow-billed cuckoo or its habitat is not affected in a manner or to an extent not previously considered. Avoidance and minimization measures will be evaluated throughout the duration of the project.
6. Water produced as a by-product of drilling or pumping will be managed to ensure maintenance or enhancement of riparian habitat.
7. Where technically and economically feasible, use directional drilling, horizontal drilling or multiple wells from the same pad to reduce surface disturbance and

eliminate drilling in suitable habitat. Ensure that such directional or horizontal drilling does not intercept or degrade alluvial aquifers.

8. Ensure that water extraction or disposal practices do not result in a change of hydrologic regime that would result in loss or degradation of riparian habitat.
9. Re-vegetate all areas of surface disturbance with native species within riparian areas and/or adjacent uplands.

Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

Colorado River Endangered Fish

The lessee/operator is given notice in order to minimize effects to critical habitats of endangered fish in the Colorado and Green Rivers, surface-disturbing activities within the 100-year floodplain of the Colorado River, Green River, and all associated back waters would not be allowed. Other avoidance and minimization measures include:

1. Surveys would be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individuals. Lease activities would require monitoring throughout the duration of the project.
2. To ensure desired results are being achieved, minimization measures would be evaluated and, if necessary, Section 7 consultation reinitiated.
3. Water production would be managed to ensure maintenance or enhancement of riparian habitat.
4. Avoid loss or disturbance of riparian habitats.
5. Conduct watershed analysis for leases in designated critical habitat and overlapping major tributaries in order to determine toxicity risk from permanent facilities.
6. Implement the Utah Oil and Gas Pipeline Crossing Guidance. In areas adjacent to 100-year floodplains, particularly in systems prone to flash floods, analyze the risk for flash floods to impact facilities, and use closed loop drilling, and pipeline burial or suspension according to the Utah Oil and Gas Pipeline Crossing Guidance to minimize the potential for equipment damage and resulting leaks or spills.
7. Water depletions from any portions of the Upper Colorado River drainage basin are considered to diversely affected and adversely modify the critical habitat of the endangered fish species (bonytail, Colorado pikeminnow, humpback chub, and razorback sucker). Section 7 consultation would be completed with the U.S. Fish and Wildlife Service (USFWS) prior to any such water depletions.
8. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the USFWS between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

Jones cycladenia

The lessee/operator is given notice that the lands located in this parcel contain potential habitat for Jones cycladenia.

In order to minimize effects to the federally threatened Jones cycladenia, the BLM, in coordination with the USFWS has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the ESA. For the purposes of this document, the following terms are so defined: potential habitat is defined as areas that satisfy the broad criteria of the species habitat description, usually determined by preliminary, in-house assessment. Suitable habitat is defined as areas that contain or exhibit the specific components or constituents necessary for plant persistence determined by field inspection and/or surveys; it may or may not contain Jones cycladenia; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/wildlife.html>. Occupied habitat is defined as areas currently or historically known to support Jones cycladenia; synonymous with "known habitat." The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100 percent of the project disturbance area within potential habitat prior to any ground disturbing activities (including ATV use) to determine if suitable Jones cycladenia habitat is present.
2. Species surveys will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous, due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, in general, 300 foot buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories:
 - a. Must be conducted by qualified individuals(s) and according to BLM and Service accepted survey protocols.
 - b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season at a time when the plant can be detected (usually April 15 to June 5; however, surveyors should verify that the plant is flowering by contacting a BLM or USFWS botanist or demonstrating that the nearest known population is in flower),
 - c. Will occur within 300 feet from the edge of the proposed right-of-way (ROW) and/or project disturbance for surface pipelines, roads, well pads, and other facilities requiring removal of vegetation.
 - d. Will include, but not be limited to, plant species lists and habitat characteristics.
 - e. Will be valid until April 15 of the following year.
 - f. Clearance surveys in occupied habitat will be combined with historic plant location data for that particular site to delineate the outer boundary of occupied habitat. The 300 foot avoidance buffer will then be applied to the outer boundary of occupied habitat for that site. This evaluation will occur in coordination with

the BLM and Service to ensure that the appropriate buffer is applied to protect both active and dormant Jones Cycladenia plants in occupied habitat.

- g. Electronic copies of clearance survey reports (including appendices) and GIS shape files will be sent no later than December 31st to each of the following:
 - Utah Natural Heritage Program (with copies of NHP field survey forms)
 - Applicable/affected land owners and/or management agencies; and
 - U.S. Fish and Wildlife Service, Utah Field Office (mailing address: 2369 West Orton Circle, Suite 50, West Valley City, Utah, Utah 84119)
3. Design project infrastructure to minimize impacts within suitable habitat:
 - a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300 foot buffers, in general; however, site-specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat.
 - b. Reduce well pad size to the minimum needed without compromising safety.
 - c. Where technically and economically feasible, use directional or horizontal drilling or multiple wells from the same pad.
 - d. Limit new access routes created by the project.
 - e. Roads and utilities should share common ROWs where possible.
 - f. Reduce the width of ROWs and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat.
 - g. Place signing to limit off-road travel in sensitive areas.
 - h. Stay on designated routes and other cleared/approved areas.
 - i. All disturbed areas will be re-vegetated with species native to the region, or seed mixtures approved by the action agency and USFWS.
4. Where there is occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
 - a. Follow the above recommendations in Section 3 for project design within suitable habitats.
 - b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged.
 - c. Construction of roads will occur such that the edge of the ROW is at least 300 feet from any plant and 300 feet from avoidance areas,
 - d. Roads will be graveled with occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15 to June 5 (flowering period); dust abatement applications will be comprised of water only.
 - e. The edge of the well pad should be located at least 300 feet away from plants and avoidance areas, in general; however, site specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat,

- f. Surface pipelines will be laid such that a 300 foot buffer exists between the edge of the ROW and plants and 300 feet between the edge of ROW and avoidance areas; use stabilizing and anchoring techniques when the pipeline crossed suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat.
 - g. Construction activities will not occur from April 15 through June 5 within occupied habitat.
 - h. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging temporary fencing, rebar, etc.,
 - i. A qualified botanist will be onsite during construction to monitor the surface disturbance activity, and assist with implementation of applicable conservation measures.
 - j. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat and
 - k. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
5. For projects that cannot implement the measures or avoidance buffers identified in number 4 above, site specific conservation measures will be developed in coordination with USFWS. Occupied Jones cycladenia habitats within 300 feet of the edge of the surface pipelines' ROWs, 300 feet of the edge of the roads' ROWs, and 300 feet from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.
6. Re-initiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the Jones cycladenia is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.

5.0 EFFECTS ANALYSIS AND DETERMINATIONS FOR BLM MOAB MLP

The management actions described in Moab MLP would only occur as a consequence of mineral activities; therefore, any mitigation or reclamation actions associated with mineral activities would be analyzed as part of the minerals program. Many of the mineral management actions are set in place to avoid or minimize potential effects to resource values which includes

threatened and endangered species. The effects analysis and determination for each species are listed below.

5.1 CALIFORNIA CONDOR

Minerals: Oil and Gas

Impacts from oil and gas development activities may include, but is not limited to disturbances related to construction activities, noise from vehicles and equipment, seismic activities, human disturbance and other related operations associated with mineral and energy developments.

Increased vehicle traffic may disturb condor nesting and roosting sites if the traffic occurs close to the canyon walls or steep slopes. Oil and gas development typically results in the disturbance or removal of vegetation and soil, and where these activities could occur within future California condor foraging habitat, the species can be affected through a loss or decrease in food base. Exploration and production activities result in increased human presence, increased noise levels, habitat fragmentation and displacement of individuals. Increased vehicle traffic associated with oil and gas exploration, development and operation may lead to an increase in roadside carrion. California condor foraging on carrion in these areas would also experience an increase in potential direct mortality from vehicle collisions.

Although these impacts could occur from the implementation of minerals management actions, management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Maximization of lease parcels to reduce redundant infrastructure
- Application of baseline CSU stipulations in an effort to reduce conflicts with other resources
- Application of NSO Stipulations in sensitive resource areas.
- Development of BMPs to minimize potential impacts associated with minerals development.

Minerals: Potash

Impacts from potash development activities may include, but is not limited to disturbances related to construction activities, noise from vehicles and equipment, human disturbance and other related operations associated with potash developments.

Increased vehicle traffic may disturb condor nesting and roosting sites if the traffic occurs close to the canyon walls or steep slopes. Potash development typically results in the disturbance or removal of vegetation and soil, and where these activities could occur within future California condor foraging habitat, the species can be affected through a loss or decrease in food base. Exploration and production activities result in increased human presence, increased noise levels, habitat fragmentation and displacement of individuals. Increased vehicle traffic associated with potash development and operation may lead to an increase in roadside carrion. California condor foraging on carrion in these areas would also experience an increase in potential direct mortality from vehicle collisions.

Although these impacts could occur from the implementation of potash development actions, many of the management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Phased potash leasing in specific areas to minimize conflicts and to test the feasibility of solution mining for deep deposits of potash on public lands within the Planning Area.
- Removal of Potash leasing areas
- Application of baseline CSU stipulations for potash prospecting permits, preference right leases and competitive leases.
- Allowance of lease cancellation if after ten years from the date of the lease issuance, potassium or related products are not being produced.

Air Quality

Mineral management actions associated with air quality seek to maintain or improve existing air quality and air quality related values (e.g. visibility) by ensuring that all authorized uses on public lands comply with and support Federal, State, and local laws and regulations for protecting air quality. As a result, the air quality program is a support program that does not directly result in additional emissions or air quality degradation. Implementing mineral management decisions that require air quality monitoring and compliance support program helps to ensure compliance for activities of other programs, and helps to ensure that mineral projects are implemented in a way that best manages, maintains and/or controls air quality. No direct or indirect impacts to the California condor are expected from mineral management actions developed for air quality resources. Activities or programs are analyzed for potential impacts to air quality resulting from authorized actions. For example, potential impacts to air quality from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

Cultural Resources

Mineral management actions associated with cultural resources which may affect the California condor include additional monitoring, data collection or mitigation. These activities could increase noise and human presence in otherwise remote areas and may increase stress levels of the California condor. Human presence may deter feeding, nesting or breeding habits. Any data collection, mitigation, or monitoring activities would be short term in nature and would only be performed by BLM approved employees and would not likely result in any adverse effects to the species.

Lands and Realty

The NSO stipulation along U.S. Highway 191 in Moab Canyon would restrict surface disturbance and would not directly affect the California condor.

The NSO stipulation within the area of the existing Three Rivers mineral withdrawal for locatable minerals would restrict surface disturbances in this area and may benefit the California condor if this species occupied the area.

CSU stipulation within one mile of the high use filming locations for visual assessment and the disallowance of heavy trucks (over 20 tons) for on the Needles Road for mineral operations would have negligible impacts.

Lands with Wilderness Characteristics

If mineral activities were to occur within lands with wilderness characteristics, the baseline CSU stipulation developed for areas with sensitive resources would be executed. Implementation of

this baseline CSU may help to reduce impacts to California condor by reducing surface disturbance, noise and human encroachment in suitable habitats. It would also leave areas open for scavenging, mating, brooding and nesting.

Natural Areas

The main objectives of the Natural Areas program is to protect, preserve and maintain wilderness characteristics of Natural Areas. As a result, the natural areas program is a support program that does not directly result in surface disturbing activities. Implementing this monitoring and support program helps to ensure compliance for activities of other programs and helps to ensure that projects are implemented in a way that best manages, maintains and/or controls natural areas. Activities or programs are analyzed for potential impacts to natural areas resulting from authorized actions. For example, potential impacts to natural areas from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

The only minerals management action developed for natural areas is the implementation of a NSO stipulation for mineral leasing to lands managed as Natural Areas. If lands in natural areas were leased, this would reduce or eliminate impacts from mineral development activities in this area and would also reduce impacts to California condor and their habitats if the natural areas were also located in suitable condor habitats.

Paleontological Resources

Minerals management actions developed for paleontological resources include the implementation of CSU stipulations that requires monitoring and the cessation of project activities until it is determined if a paleontological site can be avoided, protected or needs to be evacuated. CSU stipulations would only be initiated when a mineral development is not expected to add additional impacts to threatened and endangered species except if excavation was needed. If excavation occur in Condor habitats these activities could increase noise and human presence in otherwise remote areas and may increase stress levels of the California condor. Human presence may deter feeding, nesting or breeding habits. Any data collection, mitigation, or monitoring activities would be short term in nature, would only be performed by BLM approved employees and would not likely result in any additional adverse effects to the species. In fact, the implementation of CSU stipulations may benefit the species through additional monitoring.

Recreation

Mineral management actions developed for areas where Recreation use occurs primarily include NSO stipulations. Preventing mineral resource actions which disturb the surface would not negatively affect threatened and endangered species. Although extremely unlikely, the prevention of surface disturbing activities in areas with high recreational values may inadvertently benefit the condor, if the species also resides in the same area. The other recreation management action includes the implementation of Baseline CSU stipulations. These stipulations are listed under the minerals program. As such any effects to the species resulting from the Baseline CSU stipulations are analyzed under the minerals program.

Riparian Resources

Only one mineral management action, the implementation of NSO in riparian areas, has been developed for riparian resources. The NSO management action is intended to avoid or minimize

disturbance or loss to riparian areas. The NSO stipulations will be applied within a variety of riparian areas identified in the Moab MLP. The NSO stipulation has the potential to impact California condor in a beneficial way by reducing human caused impacts and eliminating surface disturbances in riparian areas.

Soil and Water Resources

Mineral management actions developed for soil and water resources may affect the California condor. Beneficial impacts to California condor can indirectly occur as a result of activities that are meant to maintain or improve soil and water quality/quantity. These activities would provide long-term benefits for California condor habitat and populations by maintaining or improving habitat and scavenging areas associated with condor prey.

Although most of the activities included within the soil and water resource program would not affect the species or may even provide inadvertent beneficial effects, some actions, if not managed appropriately could cause negative effects. Activities such as monitoring, mitigation and restoration of soils have the potential to negatively impact California condor on a short term basis. Potential short term negative impacts may result from land treatments on watersheds meant to reduce soil loss and the reclamation of surface disturbances or unnecessary roads. Impacts to California condor from these activities may disturb foraging areas or potential California condor habitat through the use of heavy equipment; increased human presence, and associated noise and visual impacts to California condor. This in turn could cause the condor to also leave the area or alter activities. Additional impacts to California condor from reclamation activities may include: disruption of normal behaviors such as roosting and hunting during nesting within occupied habitat for the species.

Although impacts to the species could occur from reclamation, mitigation, and monitoring actions, leasing stipulations (Appendix A) and associated BMPs (Appendix B) would prevent any impacts to the species.

Special Designations

Mineral management actions within special designation areas require NSO and CSU stipulations within various areas of interest and the closure of specified areas to mineral leasing. If lands in Special designation areas were leased under these conditions, this would reduce or eliminate impacts from mineral development activities in this area. It would also reduce impacts to California condor and their habitats if the Natural Areas was in suitable condor habitats.

Special Status Species

There are multiple special status species actions which are meant to protect threatened and endangered species from mineral developments. Some of the management actions include the implementation of BMP's, implementation and compliance of conservation measures, compliance with BLM manual 6840, application of CSU stipulations, application of NSO stipulations and the preclusion of mineral leasing within various distances of threatened and endangered species. No surface disturbing actions would occur as a result of special status species actions.

In addition to the general protection measures, there are also species specific protection measures which provide additional protections for California condor. Specific management action for the California condor include distance and timing restrictions around mating, nesting, brooding and rearing times. Other specific actions include removal of game carrion from roadways, use of directional drilling or horizontal, and site-specific surveys and monitoring.

Because the management prescriptions outlined in the program guide or advise other programs to provide additional protections for threatened, endangered, candidate and special status species no negative impacts are anticipated to occur as a result of special status species actions.

Vegetation

Mineral management actions developed to facilitate vegetation provide management prescriptions during times of drought, to minimize impacts to vegetative communities, and to control invasive and non-native weed species and prevent the introduction of new invasive species. These actions would only be prescribed if a mineral lease is instigated. No on the ground surface disturbing actions are prescribed within the program.

Baseline CSU stipulation and BMPs developed for areas with sensitive resources such as sagebrush/steppe and potential for noxious weeds would also be implemented to facilitate vegetation resources. Implementation of these baseline CSUs and BMPs may help to reduce impacts to California condor by maintaining viable habitat, reducing human related impacts on nesting, brooding and breeding routines and maintaining scavenging areas.

Visual/Auditory Resource Management

Mineral management actions developed for visual and auditory resources would help protect and preserve the scenic values and soundscapes within the Planning Area. The application of CSU's, NSO's, closing of targeted areas to mineral leasing, minimization requirements, and application of limitations on lighting and noise would not negatively affect threatened and endangered species. These actions would likely contribute beneficial impacts. Condors would be more likely to inhabit, scavenge, nest and breed in areas with reduced visual and auditory pollution.

Wildlife and Fisheries

Mineral actions which require the protection of wildlife and fisheries resources such as the implementation of BMP's, timing limitations, CSU stipulations, and the restriction of surface disturbing activities, are intended to guide or advise the minerals programs when an action may disturb wildlife and fishery resource values. Most of these actions do not result in surface disturbing activities and would not negatively affect threatened and endangered species. However, some CSUs such as the bighorn sheep CSU which precludes drilling operations and permanent facilities in lambing and rutting habitat would reduce impacts from mineral developments to California condor and their habitats as well. As a result, these actions may inadvertently provide additional protections for California condor.

Wildlife and fishery actions which call for water developments and habitat improvements within desert bighorn sheep habitat when mineral leasing actions occur, may affect the condor. This management action is intended to compensate for the loss of desert bighorn sheep habitat during the execution of a mineral lease. Although disturbances may occur, the species may also benefit from an additional water source.

Short term impacts to the California condor resulting from water developments and habitat improvements could include disturbance or displacement of individuals affecting scavenging or reproductive behaviors resulting in reduced fecundity, fertility, and birth rates. Implementation of these actions would likely also have long-term positive effects by maintaining or improving habitat conditions that could benefit California condor and their food.

5.1.2 Effects Determination

Impacts to the species could occur from mineral management actions. Leasing stipulations included in Appendix A and associated (BMP's) Appendix B would minimize the adverse impacts to the species. When a mineral lease is issued, the lessee/operator would be given notice that the lands located in the lease parcel contain potential habitat for the California condor. Avoidance or use restrictions outlined in Appendix A of the Moab MLP may be placed on areas known or suspected to be used by condors. The lessee/operator would also be required to provide habitat and occupancy surveys by a qualified individual(s). If the presence of the species is found within the project area, lease activities would require minimization and protective measures. In addition, if California condor were observed within the Planning Area, appropriate distance and timing restrictions would be implemented around nesting and roosting sites.

There is the potential for infrequent condor visits to the Planning Area east of Highway 191. However, it is extremely unlikely and therefore *discountable* that condors would nest in this area. Visits are expected to be temporary and consist of overflights and potential short-term foraging. Therefore, implementation of all Mineral decisions and operations in the Planning Area **"may affect, but are not likely to adversely affect"** the California Condor individuals or potentially suitable habitats east of Highway 191.

While impacts may occur to non-essential, experimental status population or individuals south of Interstate 70 and west of Highway 191 as a result of Mineral decisions and operations, leasing stipulations included in Appendix A of the Moab MLP would reduce any impacts to discountable levels. Therefore, implementation of the Moab MLP is **"not likely to jeopardize the continued existence (No Jeopardy)"** of California condor.

5.2 MEXICAN SPOTTED OWL

Minerals: Oil and Gas

Oil and gas development activities may result in direct, indirect impacts to Mexican spotted owl and its designated critical habitat. These activities may include, but are not limited to disturbances related to construction activities, noise from vehicles and equipment, seismic activities, human disturbance and other related operations associated with energy and mineral developments. Increased vehicle traffic may disturb owl nesting and roosting sites if the traffic occurs close to the canyon walls or steep slopes (Cresto and Riddle 2002). Oil and gas development typically results in the disturbance or removal of vegetation and soil. Where these activities occur within Mexican spotted owl hunting/foraging habitat, the species can be affected through a loss or decrease in prey base.

Oil and gas development is likely to result in habitat fragmentation and loss from construction of well pads, roads, pipelines, mines, and powerlines. In addition, exploration and production activities also likely result in increased human presence, increased noise levels, habitat fragmentation, and displacement of individuals. Nineteen percent of the Planning Area is located in designated critical habitat for the spotted owl. Although this seems like a significant amount, this only encompasses 3.8% of the total designated critical habitat for the species range wide.

Although these impacts could occur from the implementation of minerals management activities, management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Maximization of lease parcels to reduce redundant infrastructure.
- Application of baseline CSU stipulations in an effort to reduce conflicts with other resources.
- Application of NSO Stipulations in sensitive resource areas.
- Development of BMPs to minimize potential impacts associated with minerals development.

Minerals: Potash

Potash development activities may result in direct, indirect impacts to Mexican spotted owl and its designated critical habitat. These activities may include, but are not limited to disturbances related to construction activities, noise from vehicles and equipment, human disturbance and other related operations associated with potash developments. Increased vehicle traffic may disturb owl nesting and roosting sites if the traffic occurs close to the canyon walls or steep slopes (Cresto and Riddle 2002). Potash development typically results in the disturbance or removal of vegetation and soil, and where these activities occur within Mexican spotted owl hunting/foraging habitat, the species can be affected through a loss or decrease in prey base.

Potash development is likely to result in habitat fragmentation and loss from construction of roads, mines, and powerlines. In addition, exploration and production activities also likely result in increased human presence, increased noise levels, habitat fragmentation, and displacement of individuals. Nineteen percent of the Planning Area is located in designated critical habitat for the spotted owl. Although this seems like a significant amount, this only encompasses 3.8% of the total designated critical habitat for the species range wide.

Although these impacts could occur from the implementation of potash development activities, management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Phased potash leasing in specific areas to minimize conflicts and to test the feasibility of solution mining for deep deposits of potash on public lands within the Planning Area.
- Removal of areas available for potash leasing
- Application of baseline CSU stipulations for potash prospecting permits, preference right leases and competitive leases.
- Allowance of lease cancellation if after ten years from the date of the lease issuance, potassium or related products are not being produced.

Air Quality

Mineral management actions associated with air quality seek to maintain or improve existing air quality and air quality related values (e.g. visibility) by ensuring that all authorized uses on public lands comply with and support Federal, State, and local laws and regulations for protecting air quality. As a result, the air quality program is a support program that does not directly result in additional emissions or air quality degradation. Implementing mineral management decisions that require air quality monitoring and compliance support program helps to ensure compliance for activities of other programs, and helps to ensure that mineral projects are implemented in a

way that best manages, maintains, and/or controls air quality. No direct or indirect impacts to the Mexican spotted owl are expected from mineral management actions developed for air quality resources. Activities or programs are analyzed for potential impacts to air quality resulting from authorized actions. For example, potential impacts to air quality from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

Cultural Resources

Activities that occur under the cultural resources program which may affect the Mexican spotted owl and its designated critical habitat include additional monitoring, data collection and mitigation. Mineral leasing actions are not likely to occur in the canyon habitats typically utilized by Mexican spotted owl. However, if cultural resource activities were initiated because of mineral leasing actions, activities could increase noise and human presence in otherwise remote areas and may increase stress levels on the Mexican spotted owl. Human activities in viable and critical habitats may alter roosting, hunting, or dispersing behavior of adults and juveniles, resulting in dispersal or displacement of owls.

It is important to note that any cultural resource actions are typically less than one acre in size and any disturbances would be short term and isolated. Designated critical habitat for the species is found in only nineteen percent of the entire Planning Area. This constitutes only 3.8% of the total designated critical habitat for the Mexican spotted owl. As such, any impacts, would be reduced to insignificant levels. In addition, BMP's and lease notices which are specific to Mexican spotted owl and their habitat would help reduce or prevent any impacts.

Lands and Realty

The NSO stipulation along U.S. Highway 191 in Moab Canyon would restrict surface disturbance and would not directly affect the Mexican spotted owl.

The NSO stipulation for mineral leasing within the area of the existing Three Rivers mineral withdrawal for locatable minerals would restrict surface disturbances in this area and may benefit Mexican spotted owl if this species occupied the area.

CSU stipulation within one mile of the high use filming locations for visual assessment and the disallowance of heavy trucks (over 20 tons) on the Needles Road for mineral operations would have negligible impacts.

Lands With Wilderness Characteristics

If mineral activities were to occur within lands with wilderness characteristics, the baseline CSU stipulation developed for areas with sensitive resources would be executed. Implementation of this baseline CSU may help to reduce impacts to Mexican spotted owl by reducing surface disturbance, noise and human encroachment in suitable habitats. It would also leave areas open for hunting, mating, nesting, and brooding.

Natural Areas

The main objectives of the Natural Areas program is to protect, preserve, and maintain wilderness characteristics of Natural Areas. As a result, the natural areas program is a support program that does not directly result in surface disturbing activities. Implementing this monitoring and support program helps to ensure compliance for activities of other programs and helps to ensure that projects are implemented in a way that best manages, maintains, and/or

controls natural areas. Activities or programs are analyzed for potential impacts to natural areas resulting from authorized actions. For example, potential impacts to natural areas from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

The only minerals management action developed for natural areas is the implementation of a NSO stipulation for mineral leasing to lands managed as Natural Areas. If lands in natural areas were leased, this would reduce or eliminate impacts from mineral development activities in this area and would also reduce impacts to Mexican spotted owl and their habitats if the natural areas were also in suitable spotted owl habitats.

Paleontological Resources

Minerals management actions developed for paleontological resources include the implementation of CSU stipulations that requires monitoring and the cessation of project activities until it is determined if a paleontological site can be avoided, protected or needs to be evacuated. CSU stipulations would only be initiated when a mineral development is not expected to add additional impacts to threatened and endangered species except if excavation was needed. If excavation occurs in Mexican spotted owl habitats, these activities could increase noise and human presence in otherwise remote areas and may increase stress levels of Mexican spotted owl. Human presence may deter hunting, nesting or breeding habits. Any data collection, mitigation, or monitoring activities would be short term in nature, would only be performed by BLM approved employees and would not likely result in any additional adverse effects to the species. In fact, the implementation of CSU stipulations may benefit the species through additional monitoring.

Recreation

Mineral management actions developed for areas where recreation use occurs primarily include NSO stipulations. Preventing mineral resource actions which disturb the surface would not negatively affect threatened and endangered species. Although extremely unlikely, the prevention of surface disturbing activities in areas with high recreational values may inadvertently benefit Mexican spotted owl, if the species also resides in the same area. Other recreation management action includes the implementation of Baseline CSU stipulations. These stipulations are listed under the minerals program. As such any effects to the species resulting from the Baseline CSU stipulations are analyzed under the minerals program.

Riparian Resources

Only one mineral management action, the implementation of NSO in riparian areas, has been developed for riparian resources. The NSO management action is intended to avoid or minimize disturbance or loss to riparian areas. The NSO stipulations will be applied within a variety of riparian areas identified in the Moab MLP. The NSO stipulation has the potential to impact Mexican spotted owl in a beneficial way by reducing human caused impacts and eliminating surface disturbances in riparian areas.

Soil and Water Resources

Mineral management actions developed for soil and water resources may affect Mexican spotted owl. Beneficial impacts to Mexican spotted owl can indirectly occur as a result of activities that are meant to maintain or improve soil and water quality/quantity. These activities

would provide long-term benefits for Mexican spotted owl habitat and populations by maintaining or improving habitat and hunting areas associated with spotted owl prey.

Although most of the activities included within the soil and water resource program would not affect the species or may even provide inadvertent beneficial effects, some actions, if not managed appropriately could cause negative effects. Activities such as monitoring, mitigation and restoration of soils have the potential to negatively impact Mexican spotted owl on a short term basis. Potential short term negative impacts may result from land treatments on watersheds meant to reduce soil loss and the reclamation of surface disturbances or unnecessary roads. Impacts to Mexican spotted owl from these activities may disturb hunting areas or potential Mexican spotted owl habitat through the use of heavy equipment; increased human presence, and associated noise and visual impacts. This in turn could cause the Mexican spotted owl to also leave the area or alter activities. Additional impacts to Mexican spotted owl from reclamation activities may include disruption of normal behaviors such as roosting and hunting during nesting within occupied habitat for the species.

Although impacts to the species could occur from reclamation, mitigation, and monitoring actions, leasing stipulations (Appendix A) and associated BMPs (Appendix B) would prevent any impacts to the species.

Special Designations

Mineral management actions within special designation areas require NSO and CSU stipulations within various areas of interest and the closure of specified areas to mineral leasing. If lands in special designation areas were leased under these conditions, this would reduce or eliminate impacts from mineral development activities. It would also reduce impacts to Mexican spotted owl and their habitats if the special designation areas were in suitable spotted owl habitats.

Special Status Species (Threatened, Endangered, and Sensitive)

There are multiple special status species actions which are meant to protect threatened and endangered species from mineral developments. Some of the management actions include the implementation of BMP's, implementation and compliance of conservation measures, compliance with BLM manual 6840, application of CSU stipulations, application of NSO stipulations and the preclusion of mineral leasing within various distances of threatened and endangered species. No surface disturbing actions would occur as a result of special status species actions.

In addition to the general protection measures, there are also species specific protection measures which provide additional protections for Mexican spotted owl. Specific management actions for Mexican spotted owl include distance and timing restrictions around mating, nesting, brooding and rearing times. Other specific actions include rehabilitation and revegetation of roadways, reduction of noise emissions, use of directional or horizontal drilling and site specific surveys and monitoring.

Because the management prescriptions outlined in the program guide or advise other programs to provide additional protections for threatened, endangered, candidate and special status species, no negative impacts are anticipated to occur as a result of special status species actions.

Vegetation

Mineral management actions developed to facilitate vegetation provide management prescriptions during times of drought, to minimize impacts to vegetative communities, and control invasive and non-native weed species and prevent the introduction of new invasive species. No on the ground surface disturbing actions are prescribed within the program. In addition, these actions would only be prescribed if a mineral lease is instigated.

Baseline CSU stipulation and BMPs developed for areas with sensitive resources such as sagebrush/steppe and potential for noxious weeds would also be implemented to facilitate vegetation resources. Implementation of these baseline CSUs and BMPs may help to reduce impacts to Mexican spotted owl by maintaining viable habitat, reducing human related impacts on nesting, brooding and breeding routines, and maintaining hunting areas.

Visual/Auditory Resource Management

Mineral management actions developed for visual and auditory resources would help protect and preserve the scenic values and soundscapes within the Planning Area. The application of CSU's, NSO's, closing of targeted areas to mineral leasing, minimization requirements, and application of limitations on lighting and noise would not negatively affect threatened and endangered species and would likely contribute beneficial impacts. Mexican spotted owl would be more likely to inhabit, hunt, nest and breed in areas with reduced visual and auditory pollution.

Wildlife and Fisheries

Mineral actions which require the protection of wildlife and fisheries resources such as the implementation of BMP's, timing limitations, CSU stipulations, and the restriction of surface disturbing activities are intended to guide or advise the minerals programs when an action may disturb wildlife and fishery resource values. Most of these actions do not result in surface disturbing activities and would not negatively affect threatened and endangered species. However, some CSUs such as the bighorn sheep CSU which precludes drilling operations and permanent facilities in lambing and rutting habitat would also reduce impacts from mineral developments to Mexican spotted owl and their habitats. As a result, these actions may inadvertently provide additional protections for spotted owl.

Wildlife and fishery actions which call for water developments and habitat improvements within desert bighorn sheep habitat when mineral leasing actions occur, may affect spotted owl. This management action is intended to compensate for the loss of desert bighorn sheep habitat during the execution of a mineral lease. These activities could temporarily increase human presence and noise in localized areas and could physically remove potential hunting habitat. The effects of these disturbances would include decreases in prey species and temporary displacement from the disturbance locations. As well as potential decreases in nesting success due to increased travel distances and time away from young. Although disturbances may occur, the species may also benefit from an additional water source. Implementation of these actions would likely have long-term positive effects by maintaining or improving habitat conditions that could benefit Mexican spotted owl and their prey.

5.2.2 Effects Determination

Designated critical habitat for the Mexican spotted owl is found in only nineteen percent of the entire Planning Area. This constitutes only 3.8% of the total designated critical habitat for the Mexican spotted owl. As such, impacts to the species resulting from the implementation of the

mineral actions described in the Moab MLP would not significantly affect the species over its entire range.

Although impacts to the species could occur, leasing stipulations included in Appendix A of the Moab MLP and associated BMPs (Appendix B) would reduce or prevent any impacts. When a lease is issued, the lessee/operator is given notice that the lands in the parcel contain suitable or designated critical habitat for Mexican spotted owl. In order to protect Mexican spotted owl habitat and avoid negative impacts to the species, actions would be avoided or restricted which could cause stress and disturbance during periods of breeding, nesting and the rearing of young. Before any action could take place, the lessee/operator would be required to provide habitat suitability and occupancy surveys by a qualified individual(s). If the presence of the species is found within the project area, lease activities would require timing and distance restrictions around breeding, rearing, and nesting times. Minimization and other protective measures would also be required. Temporary actions may require extra habitat rehabilitation efforts.

The effects determination only addresses changes in management that would occur from the Moab MLP. Management decisions close approximately twenty seven percent of habitat to mineral activities and manage approximately fifty three percent of this habitat with a NSO stipulation. Despite these management decisions, as well as measures included in Appendix A and Appendix B, impacts to the species may occur. These impacts are likely to directly and indirectly affect Mexican spotted owl habitat through loss and fragmentation of habitat, erosion and sediment yield, and leaks of petroleum products, which can degrade the quality of the habitat as well as lead to the increased potential for introduction of noxious weeds. Risks associated with Minerals decisions identified in the Moab MLP, have some potential to impact the species. Therefore, implementation of the Moab MLP, **"May Affect, and is Likely to Adversely Affect"** the Mexican spotted owl and its designated critical habitat.

5.3 SOUTHWESTERN WILLOW FLYCATCHER

Minerals: Oil and Gas

Riparian areas within the Planning Area are located in areas that are open to oil and gas leasing but are subject to major constraints such as NSO. No surface occupancy oil and gas leasing can be accomplished through directional or horizontal drilling. Human activity associated with oil and gas development may negatively impact southwestern willow flycatcher behavior by causing flycatchers to avoid or abandon areas with human activity. Construction of roads, pads, and other facilities associated with development of mineral resources can alter or destroy existing terrestrial habitats that may be suitable southwestern willow flycatcher nesting, roosting and foraging habitats. Southwestern willow flycatcher may be attracted to oil and gas development waste water evaporation ponds. The water can be contaminated with toxins that may be harmful and could cause direct mortality.

Although these impacts could occur from the implementation of minerals management actions, management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Maximization of lease parcels to reduce redundant infrastructure.
- Application of baseline CSU stipulations in an effort to reduce conflicts with other resources.
- Application of NSO Stipulations in sensitive resource areas.

- Development of BMPs to minimize potential impacts associated with minerals development.

Minerals: Potash

NSO stipulations prevent any Minerals: Potash developments from occurring within 500 feet of riparian areas. Flycatchers typically nest in strips of riparian vegetation that is at least 33 feet wide. Human activity associated with potash development may negatively impact southwestern willow flycatcher behavior by causing flycatchers to avoid or abandon areas with human activity. Construction of roads and other facilities associated with development of potash can alter or destroy existing terrestrial habitats that may be suitable southwestern willow flycatcher nesting, roosting, and foraging habitats.

Although these impacts could occur from the implementation of potash development actions, management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Phased potash leasing in specific areas to minimize conflicts and to test the feasibility of solution mining for deep deposits of potash on public lands within the Planning Area.
- Removal of areas available potash leasing.
- Application of baseline CSU stipulations for potash prospecting permits, preference right leases and competitive leases.
- Allowance of lease cancellation if after ten years from the date of the lease issuance, potassium or related products are not being produced.

Air Quality

Mineral management actions associated with air quality seek to maintain or improve existing air quality and air quality related values (e.g. visibility) by ensuring that all authorized uses on public lands comply with and support Federal, State, and local laws and regulations for protecting air quality. As a result, the air quality program is a support program that does not directly result in additional emissions or air quality degradation. Implementing mineral management decisions that require air quality monitoring and compliance support program helps to ensure compliance for activities of other programs, and helps to ensure that mineral projects are implemented in a way that best manages, maintains, and/or controls air quality. No direct or indirect impacts to southwestern willow flycatcher are expected from mineral management actions developed for air quality resources. Activities or programs are analyzed for potential impacts to air quality resulting from authorized actions. For example, potential impacts to air quality from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

Cultural Resources

Mineral management actions associated with cultural resources which may affect southwestern willow flycatcher include additional monitoring, data collection or mitigation. These activities could increase noise and human presence in otherwise remote areas and may increase stress levels of southwestern willow flycatcher. Human presence may deter feeding, nesting or breeding habits. Any data collection, mitigation, or monitoring activities would be short term in nature and would only be performed by BLM approved employees and would not likely result in any adverse effects to the species.

Lands and Realty

NSO stipulation along U.S. Highway 191 in Moab Canyon would restrict surface disturbance and would not directly affect the southwestern willow flycatcher.

The NSO stipulation for mineral leasing within the area of the existing Three Rivers mineral withdrawal for locatable minerals would restrict surface disturbances in this area and may benefit southwestern willow flycatcher if this species occupied the area.

CSU stipulation within one mile of the high use filming locations for visual assessment and the disallowance of heavy trucks (over 20 tons) for on the Needles Road for mineral operations would have negligible impacts.

Lands With Wilderness Characteristics

If mineral activities were to occur within lands with wilderness characteristics, the baseline CSU stipulation developed for areas with sensitive resources would be executed. Implementation of this baseline CSU may help to reduce impacts to southwestern willow flycatcher by reducing surface disturbance, noise and human encroachment in suitable habitats. It would also leave areas open for hunting, mating, brooding, and nesting.

Natural Areas

The main objectives of the Natural Areas program is to protect, preserve, and maintain wilderness characteristics of Natural Areas. As a result, the natural areas program is a support program that does not directly result in surface disturbing activities. Implementing this monitoring and support program helps to ensure compliance for activities of other programs and helps to ensure that projects are implemented in a way that best manages, maintains, and/or controls natural areas. Activities or programs are analyzed for potential impacts to natural areas resulting from authorized actions. For example, potential impacts to natural areas from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

The only minerals management action developed for natural areas is the implementation of a NSO stipulation for mineral leasing to lands managed as natural areas. If lands in natural areas were leased, this would reduce or eliminate impacts from mineral development activities in this area and would also reduce impacts to southwestern willow flycatcher and their habitats if the natural areas were also in suitable southwestern willow flycatcher habitats.

Paleontological Resources

Minerals management actions developed for paleontological resources include the implementation of CSU stipulations that requires monitoring and the cessation of project activities until it is determined if a paleontological site can be avoided, protected or needs to be evacuated. CSU stipulations would only be initiated when a mineral development is not expected to add additional impacts to threatened and endangered species except if excavation was needed. If excavation occurs in southwestern willow flycatcher habitat, these activities could increase noise and human presence in otherwise remote areas and may increase stress levels of southwestern willow flycatcher. Human presence may deter feeding, nesting or breeding habits. Any data collection, mitigation, or monitoring activities would be short term in nature, would only be performed by BLM approved employees and would not likely result in any additional adverse effects to the species. In fact, the implementation of CSU stipulations may benefit the species through additional monitoring.

Recreation

Mineral management actions developed for areas where recreation use occurs primarily include NSO stipulations. Preventing mineral resource actions which disturb the surface would not negatively affect threatened and endangered species. Although extremely unlikely, the prevention of surface disturbing activities in areas with high recreational values may inadvertently benefit southwestern willow flycatcher, if the species also resides in the same area. The other recreation management action includes the implementation of Baseline CSU stipulations. These stipulations are listed under the minerals program. As such any effects to the species resulting from the Baseline CSU stipulations are analyzed under the minerals program.

Riparian Resources

Only one mineral management action, the implementation of NSO in riparian areas, has been developed for riparian resources. The NSO management action is intended to avoid or minimize disturbance or loss to riparian areas. The NSO stipulations would be applied within a variety of riparian areas identified in the Moab MLP. The NSO stipulation has the potential to beneficially impact southwestern willow flycatcher by preserving viable habitat, reducing human caused impacts and eliminating surface disturbances in riparian areas.

Soil and Water Resources

Mineral management actions developed for soil and water resources may affect southwestern willow flycatcher. Beneficial impacts to southwestern willow flycatcher can indirectly occur as a result of activities that are meant to maintain or improve soil and water quality/quantity through reclamations and rehabilitations. These activities would provide long-term benefits for southwestern willow flycatcher habitat and populations by maintaining or improving habitat and feeding areas.

Although most of the soil and water resource activities would provide inadvertent beneficial effects, some actions, if not managed appropriately could cause negative effects. Activities such as monitoring, mitigation and restoration of soils have the potential to negatively impact southwestern willow flycatcher on a short term basis. These activities could result in the disruption of normal behaviors such as roosting, hunting and nesting, or by causing avoidance of hunting areas. Impacts to potentially suitable habitat may result from land treatments on watersheds meant to reduce soil loss and the reclamation of surface disturbances or unnecessary roads. Impacts to southwestern willow flycatcher from these activities may include, noise from heavy equipment, temporary loss of hunting habitats, increased human presence, and impacts to prey (insects) and prey habitats.

Although impacts to the species could occur from reclamation, mitigation, and monitoring actions, leasing stipulations (Appendix A) and associated BMP's (Appendix B) would prevent any impacts to the species.

Special Designations

Mineral management actions within special designation areas require NSO and CSU stipulations within various areas of interest and the closure of specified areas to mineral leasing. If lands in special designation areas were leased under these conditions, this would reduce or eliminate impacts from mineral development activities. It would also reduce impacts to southwestern willow flycatcher and their habitats if the special designation areas were in suitable southwestern willow flycatcher habitats.

Special Status Species

There are multiple special status species actions which are meant to protect threatened and endangered species from mineral developments. Some of the management actions include the implementation of BMP's, implementation and compliance of conservation measures, compliance with BLM manual 6840, application of CSU stipulations, application of NSO stipulations and the preclusion of mineral leasing within various distances of threatened and endangered species. No surface disturbing actions would occur as a result of special status species actions.

In addition to the general protection measures, there are also species specific protection measures which provide additional protections for southwestern willow flycatcher. Specific management action for southwestern willow flycatcher includes the initiation of consultation of the USFWS and timing and distance restrictions around mating, nesting, brooding and rearing periods.

Because the management prescriptions outlined in the program guide or advise other programs to provide additional protections for threatened, endangered, candidate and special status species, no negative impacts are anticipated to occur as a result of special status species actions.

Vegetation

Mineral management actions developed to facilitate vegetation provide management prescriptions during times of drought which minimize impacts to vegetative communities, control invasive and non-native weed species and prevents the introduction of new invasive species. No on the ground surface disturbing actions are prescribed within the program.

Baseline CSU stipulation and BMPs developed for areas with sensitive resources such as sagebrush/steppe and potential for noxious weeds would also be implemented to facilitate vegetation resources. Implementation of these baseline CSUs and BMPs may help to reduce impacts to southwestern willow flycatcher by maintaining viable habitat, reducing human related impacts on nesting, brooding and breeding routines, maintaining hunting and foraging areas.

Visual/Auditory Resource Management

Mineral management actions developed for visual and auditory resources would help protect and preserve the scenic values and soundscapes within the Planning Area. The application of CSU's, NSO's, closing of targeted areas to mineral leasing, minimization requirements and application of limitations on lighting and noise would not negatively affect threatened and endangered species. These actions would likely contribute beneficial impacts. Southwestern willow flycatcher would be more likely to inhabit, forage, nest and breed in areas with reduced visual and auditory pollution.

Wildlife and Fisheries

Mineral actions which require the protection of wildlife and fish resources such as the implementation of BMP's, timing limitations, CSU stipulations, and the restriction of surface disturbing activities, are intended to guide or advise the minerals programs when an action may disturb wildlife and fishery resource values. Most of these actions do not result in surface disturbing activities and would not negatively affect threatened and endangered species. Some CSUs such as the bighorn sheep CSU which precludes drilling operations and permanent facilities in lambing and rutting habitat would also reduce impacts from mineral developments to

southwestern willow flycatcher and their habitats. As a result, these actions may inadvertently provide additional protections for southwestern willow flycatcher.

Management actions which call for water developments and habitat improvements within desert bighorn sheep habitat when mineral leasing actions occur may also affect southwestern willow flycatcher. This management action is intended to compensate for the loss of desert bighorn sheep habitat during the execution of a mineral lease. Although riparian habitat upgrades would likely have long-term beneficial impacts to potential southwestern willow flycatcher habitat, short-term negative effects associated with these activities could occur. Physical disturbances associated with water improvements and riparian habitat upgrades would negatively impact southwestern willow flycatcher habitat through destruction of potential nesting habitats and protective cover.

Water developments in or near riparian habitats could also negatively impact southwestern willow flycatcher habitat by increasing grazing pressures from cattle and big game. Increased animal abundance in these areas could increase the potential for the trampling of vegetation and potential nesting areas. Rangeland treatments outside of riparian areas may also have indirect impacts on riparian habitats by increasing erosion and sediment yield therefore altering water flow and stream morphology.

5.3.2 Effects Determination

Only 1.3% (12,155 acres) of the Planning Area has riparian areas potentially suitable for southwestern willow flycatcher use. Only transient southwestern willow flycatcher have been identified within the Planning Area. Southwestern willow flycatcher have been documented migrating along the Indian Creek corridor area and in the Moab FO along the Colorado, Green and Dolores rivers. Nesting and mating pairs have not been observed. However, because viable riparian vegetation is present within the Planning Area, southwestern willow flycatcher may begin to utilize the area for nesting, breeding, and stopover visits at some time in the future. Therefore, any analysis within this document would be used in the future if or when the species decides to move within the Planning Area.

Although impacts to the species could occur, leasing stipulations (Appendix A) and associated Best Management Practices (Appendix B) would prevent or reduce any impacts. When a lease is issued, the lessee/operator is given notice that the wetlands within the parcel contain suitable habitat for southwestern willow flycatcher. In order to protect southwestern willow flycatcher and avoid negative impacts to the species, actions which may cause stress and disturbance during periods of breeding, nesting and the rearing of young would be avoided or restricted.

Per leasing stipulations, before and during any action, the lessee/operator would be required to provide habitat suitability and occupancy surveys by a qualified individual(s). If the presence of the species is found within the project area, lease activities would require timing and distance restrictions around breeding, rearing and nesting times. Minimization and other protective measures would also be required. Stipulations require that a 300 foot buffer must be maintained around riparian areas. In addition, water resources would be managed to ensure maintenance or enhancement of riparian habitat.

The effects determination only addresses changes in management that would occur from Moab MLP implementation. Management decisions close approximately 25% of the species' habitat to mineral activities and manage approximately 74% of this habitat with a NSO stipulation. Despite these management decisions, as well as measures included in Appendix A and

Appendix B, impacts to the species may occur. These impacts are likely to directly and indirectly affect riparian habitat (and therefore, southwestern willow flycatcher habitat) through loss and fragmentation of habitat, human disturbance, activity and noise, erosion and sediment yield, and leaks of petroleum products, which can degrade the quality of the habitat as well as lead to the increased potential for introduction of noxious weeds. Risks associated with Minerals decisions identified in the Moab MLP, have some potential to impact the southwestern willow flycatcher. Therefore, implementation of the Moab MLP **"May Affect and is Likely to Adversely Affect"** southwestern willow flycatcher.

5.4 WESTERN YELLOW-BILLED CUCKOO

Minerals: Oil and Gas

Riparian areas within the Planning Area are located in areas that are open to oil and gas leasing but are subject to major constraints such as NSO. No surface occupancy oil and gas leasing can be accomplished through directional or horizontal drilling. Human activity associated with oil and gas development may negatively impact western yellow-billed cuckoo behavior by causing cuckoos to avoid or abandon areas with human activity. Construction of roads, pads, and other facilities associated with development of mineral resources can alter or destroy existing terrestrial habitats that may be suitable western yellow-billed cuckoo nesting, roosting, and foraging habitats. Western yellow-billed cuckoo may be attracted to oil and gas development waste water evaporation ponds. The water can be contaminated with toxins that may be harmful and could cause direct mortality.

Although these impacts could occur from the implementation of minerals management actions. Many of the management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Maximization of lease parcels to reduce redundant infrastructure.
- Application of baseline CSU stipulations in an effort to reduce conflicts with other resources.
- Application of NSO Stipulations in sensitive resource areas.
- Development of BMPs to minimize potential impacts associated with minerals development.

Minerals: Potash

The NSO stipulations prevent any Minerals: Potash developments from occurring within 500 feet of riparian areas. Cuckoos typically nest in strips of riparian vegetation that is at least 33 feet wide. Human activity associated with potash development may negatively impact western yellow-billed cuckoo behavior by causing cuckoos to avoid or abandon areas with human activity. Construction of roads and other facilities associated with development of potash can alter or destroy existing terrestrial habitats that may be suitable western yellow-billed cuckoo nesting, roosting and foraging habitats.

Although these impacts could occur from the implementation of potash development actions, management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Phased potash leasing in specific areas to minimize conflicts and to test the feasibility of solution mining for deep deposits of potash on public lands within the Planning Area.

- Removal of areas available for potash leasing.
- Application of baseline CSU stipulations for potash prospecting permits, preference right leases and competitive leases.
- Allowance of lease cancellation if after ten years from the date of the lease issuance, potassium or related products are not being produced.

Air Quality

Mineral management actions associated with air quality seek to maintain or improve existing air quality and air quality related values (e.g. visibility) by ensuring that all authorized uses on public lands comply with and support Federal, State, and local laws and regulations for protecting air quality. As a result, the air quality program is a support program that does not directly result in additional emissions or air quality degradation. Implementing mineral management decisions that require air quality monitoring and compliance support program helps to ensure compliance for activities of other programs, helps to ensure that mineral projects are implemented in a way that best manages, maintains and/or controls air quality. No direct or indirect impacts to western yellow-billed cuckoo are expected from mineral management actions developed for air quality resources. Activities or programs are analyzed for potential impacts to air quality resulting from authorized actions. For example, potential impacts to air quality from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

Cultural Resources

Although mineral lease actions are restricted in wetland areas, actions which could take place in nearby areas may affect the species. Mineral management actions associated with cultural resources which may affect western yellow-billed cuckoo include additional monitoring and data collection or mitigation. These activities could increase noise and human presence in otherwise remote areas and may increase stress levels of western yellow-billed cuckoo. Human presence may deter feeding, nesting or breeding habits. Any data collection, mitigation, or monitoring activities would be short term in nature, would only be performed by BLM approved employees and would not likely result in any adverse effects to the species.

Lands and Realty

The NSO stipulation along U.S. Highway 191 in Moab Canyon would restrict surface disturbance and would not directly affect the western yellow-billed cuckoo.

NSO for mineral leasing within the area of the existing Three Rivers mineral withdrawal for locatable minerals would restrict surface disturbances in this area and may benefit western yellow-billed cuckoo, if this species occupied the area.

CSU stipulation within one mile of the high use filming locations for visual assessment and the disallowance of heavy trucks (over 20 tons) for on the Needles Road for mineral operations would have negligible impacts.

Lands With Wilderness Characteristics

If mineral activities were to occur within lands with wilderness characteristics, the baseline CSU stipulation developed for areas with sensitive resources would be executed. Implementation of this baseline CSU may help to reduce impacts to western yellow-billed cuckoo by reducing

surface disturbance, noise and human encroachment in suitable habitats. It would also leave areas open for hunting, mating, brooding and nesting.

Natural Areas

The main objectives of the natural areas program is to protect, preserve and maintain wilderness characteristics of natural areas. As a result, the natural areas program is a support program that does not directly result in surface disturbing activities. Implementing this monitoring and support program helps to ensure compliance for activities of other programs and helps to ensure that projects are implemented in a way that best manages, maintains, and/or controls natural areas. Activities or programs are analyzed for potential impacts to natural areas resulting from authorized actions. For example, potential impacts to natural areas from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

The only minerals management action developed for natural areas is the implementation of a NSO stipulation for mineral leasing to lands managed as natural areas. If lands in natural areas were leased, this would reduce or eliminate impacts from mineral development activities in this area and would also reduce impacts to western yellow-billed cuckoo and their habitats if the natural areas were also in suitable western yellow-billed cuckoo habitats.

Paleontological Resources

Minerals management actions developed for paleontological resources include the implementation of CSU stipulations that requires monitoring and the cessation of project activities until it is determined if a paleontological site can be avoided, protected or needs to be evacuated. CSU stipulations would only be initiated when a mineral development is not expected to add additional impacts to threatened and endangered species except if excavation was needed. If excavation occurs in western yellow-billed cuckoo habitat, these activities could increase noise and human presence in otherwise remote areas and may increase stress levels of western yellow-billed cuckoo. Human presence may deter feeding, nesting or breeding habits. Any data collection, mitigation, or monitoring activities would be short term in nature, would only be performed by BLM approved employees and would not likely result in any additional adverse effects to the species. In fact, the implementation of CSU stipulations may benefit the species through additional monitoring.

Recreation

Mineral management actions developed for areas where recreation use occurs primarily include NSO stipulations. Preventing mineral resource actions which disturb the surface would not negatively affect threatened and endangered species. Although extremely unlikely, the prevention of surface disturbing activities in areas with high recreational values may inadvertently benefit western yellow-billed cuckoo, if the species also resides in the same area. The other recreation management action includes the implementation of Baseline CSU stipulations. These stipulations are listed under the minerals program. As such, any effects to the species resulting from the Baseline CSU stipulations are analyzed under the minerals program.

Riparian Resources

Only one mineral management action, the implementation of NSO in riparian areas, has been developed for riparian resources. The NSO management action is intended to avoid or minimize

disturbance or loss to riparian areas. The NSO stipulations would be applied within a variety of riparian areas identified in the Moab MLP. The NSO stipulation has the potential to beneficially impact western yellow-billed cuckoo by preserving viable habitat, reducing human caused impacts and eliminating surface disturbances in riparian areas.

Soil and Water Resources

Mineral management actions developed for soil and water resources may affect western yellow-billed cuckoo. Beneficial impacts to western yellow-billed cuckoo can indirectly occur as a result of activities that are meant to maintain or improve soil and water quality/quantity through reclamations and rehabilitations. These activities would provide long-term benefits for western yellow-billed cuckoo habitat and populations by maintaining or improving habitat and feeding areas.

Although most of the soil and water resource activities would provide inadvertent beneficial effects, some actions, if not managed appropriately could cause negative effects. Activities such as monitoring, mitigation and restoration of soils have the potential to negatively impact western yellow-billed cuckoo on a short term basis. These activities could result in the disruption of normal behaviors such as roosting, hunting and nesting, or by causing avoidance of hunting areas. Impacts to potentially suitable habitat may result from land treatments on watersheds meant to reduce soil loss and the reclamation of surface disturbances or unnecessary roads. Impacts to western yellow-billed cuckoo from these activities may include, noise from heavy equipment, temporary loss of hunting habitats, increased human presence and impacts to prey (insects) and prey habitats.

Although impacts to the species could occur from reclamation, mitigation, and monitoring actions, leasing stipulations (Appendix A) and associated BMP's (Appendix B) would prevent any impacts to the species.

Special Designations

Mineral management actions within special designation areas require NSO and CSU stipulations within various areas of interest and the closure of specified areas to mineral leasing. If lands in special designation areas were leased under these conditions, impacts from mineral development activities would be reduced or eliminated. It would also reduce impacts to western yellow-billed cuckoo and their habitats if the special designation areas were in suitable western yellow-billed cuckoo habitats.

Special Status Species

There are multiple special status species actions which are meant to protect threatened and endangered species from mineral developments. Some of the management actions include the implementation of BMP's, implementation and compliance of conservation measures, compliance with BLM manual 6840, application of CSU stipulations, application of NSO stipulations and the preclusion of mineral leasing within various distances of threatened and endangered species. No surface disturbing actions would occur as a result of special status species actions.

In addition to the general protection measures, there are also species specific protection measures which provide additional protections for western yellow-billed cuckoo. Specific management action for western yellow-billed cuckoo includes the initiation of consultation with the USFWS and timing and distance restrictions around mating, nesting, brooding and rearing periods.

Because the management prescriptions outlined in the program guide or advise other programs to provide additional protections for threatened, endangered, candidate and special status species, no negative impacts are anticipated to occur as a result of special status species actions.

Vegetation

Mineral management actions developed to facilitate vegetation provide management prescriptions during times of drought, to minimize impacts to vegetative communities, control invasive and non-native weed species and prevent the introduction of new invasive species. No on the ground surface disturbing actions are prescribed within the program. Baseline CSU stipulation and BMPs developed for areas with sensitive resources such as sagebrush/steppe and potential for noxious weeds would also be implemented to facilitate vegetation resources. Implementation of these baseline CSUs and BMPs may help to reduce impacts to western yellow-billed cuckoo by maintaining viable habitat, reducing human related impacts on nesting, brooding and breeding routines and maintaining hunting and foraging areas.

Visual/Auditory Resource Management

Mineral management actions developed for visual and auditory resources would help protect and preserve the scenic values and soundscapes within the Planning Area. The application of CSU's, NSO's, closing of targeted areas to mineral leasing, minimization requirements, application of limitations on lighting and noise would not negatively affect threatened and endangered species and would likely contribute beneficial impacts. Western yellow-billed cuckoo would be more likely to inhabit, forage, nest and breed in areas with reduced visual and auditory pollution.

Wildlife and Fisheries

Mineral actions which require the protection of wildlife and fish resources such as the implementation of BMP's, timing limitations, CSU stipulations and the restriction of surface disturbing activities, are intended to guide or advise the minerals programs when an action may disturb wildlife and fishery resource values. Most of these actions do not result in surface disturbing activities and would not negatively affect threatened and endangered species. However, some CSUs such as the bighorn sheep CSU which precludes drilling operations and permanent facilities in lambing and rutting habitat would also reduce impacts from mineral developments to western yellow-billed cuckoo and their habitats. As a result, these actions may inadvertently provide additional protections for western yellow-billed cuckoo.

Management actions which call for water developments and habitat improvements within desert bighorn sheep habitat when mineral leasing actions occur, may also affect western yellow-billed cuckoo. This management action is intended to compensate for the loss of desert bighorn sheep habitat during the execution of a mineral lease. Although riparian habitat upgrades would likely have long-term beneficial impacts to potential western yellow-billed cuckoo habitat, short-term negative effects associated with these activities could occur. Physical disturbances associated with water improvements and riparian habitat upgrades would negatively impact western yellow-billed cuckoo habitat through destruction of potential nesting habitats and protective cover.

Water developments in or near riparian habitats could also negatively impact western yellow-billed cuckoo habitat by increasing grazing pressures from cattle and big game. Increased animal abundance in these areas could increase the potential for the trampling of vegetation and potential nesting areas. Rangeland treatments outside of riparian areas may also have

indirect impacts on riparian habitats by increasing erosion and sediment yield therefore altering water flow and stream morphology.

5.4.2 Effects Determination

Only 1.3% of the Planning Area has riparian areas potentially suitable to house western yellow billed cuckoo. To date, western yellow billed cuckoo have not been identified within the Planning Area. However, because viable riparian vegetation is present within the Planning Area, western yellow billed-cuckoo may begin to utilize the area for nesting, breeding, and stopover visits at some time in the future. For this reason, the species is included in the analysis of the Moab MLP.

Although impacts to the species could occur, leasing stipulations (Appendix A) and associated BMPs (Appendix B) would reduce or prevent any impacts. When a lease is issued, the lessee/operator is given notice that the wetlands within the parcel contain suitable habitat for western yellow billed cuckoo. In order to protect western yellow billed cuckoo and avoid negative impacts to the species, actions which may cause stress and disturbance during periods of breeding, nesting and the rearing of young would be avoided or restricted.

Per leasing stipulations, before and during any action, the lessee/operator would be required to provide habitat suitability and occupancy surveys by a qualified individual(s). If the presence of the species is found within the project area, lease activities would require timing and distance restrictions around breeding, rearing and nesting times. Minimization and other protective measures would also be required. Stipulations require that a 300 foot buffer must be maintained around riparian areas. In addition, water resources would be managed to ensure maintenance or enhancement of riparian habitat.

Management decisions close approximately 25% of the species' habitat to mineral activities and manage approximately 74% of this habitat with a NSO stipulation. Despite these management decisions, as well as measures included in Appendix A and Appendix B, impacts to the species may occur. These impacts are likely to directly and indirectly affect riparian habitat and therefore, western yellow-billed cuckoo habitat through loss and fragmentation of habitat, human disturbances, activities and noise, erosion and sediment yield, and leaks of petroleum products, which can degrade the quality of the habitat as well as lead to the increased potential for introduction of noxious weeds. Risks associated with Minerals decisions identified in the Moab MLP, have some potential to impact the species; therefore, implementation of the Moab MLP "May Affect and is Likely to Adversely Affect" western yellow-billed cuckoo.

5.5 ENDANGERED COLORADO RIVER FISH- BONYTAIL, COLORADO PIKEMINNOW, HUMPBAC CHUB, RAZORBACK SUCKER

Minerals: Oil and Gas

Riparian habitat within the Planning Area is located in areas that are open to oil and gas leasing but is subject to major constraints such as NSO. No surface occupancy oil and gas leasing can be accomplished through directional or horizontal drilling. If oil and gas activities were to occur within potential habitat for the listed fish species, impacts may include the loss/fragmentation of habitat, erosion and sediment yield which can degrade the quality of the habitat and the increased potential for introduction of noxious weeds. The primary indirect effect is the change in surface water flow regimes associated with sedimentation and precipitation. Surface

disturbance associated with the construction of well pads, access roads, pipelines, etc., may lead to increased soil erosion, and storm water runoff with heavy concentrations of sediment.

Oil and gas activities within watersheds and near rivers can increase the likelihood for leaks of petroleum products within Colorado River fish species habitat. Leaks can degrade habitat of the Colorado River fish species. Mineral development activities, such as dust control measures, may result in a depletion of water within these watersheds. Disturbance or removal of upland vegetation within watersheds containing potential habitat for listed fish species could result in increased erosion and sediment that degrade water quantity (reducing ground water discharge into the stream, river, or lake) and water quality (changes in water chemistry, such as pH and dissolved oxygen, temperature, sediment, contamination and nutrient availability).

Although these impacts could occur from the implementation of minerals management actions. Many of the management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Maximization of lease parcels to reduce redundant infrastructure.
- Application of baseline CSU stipulations in an effort to reduce conflicts with other resources.
- Application of NSO Stipulations in sensitive resource areas.
- Development of BMPs to minimize potential impacts associated with minerals development.

Oil and gas leasing activities may occur near designated critical habitat for the Colorado River fish species. However, species specific leasing stipulations such as the prevention of water depletions to the upper Colorado system would ensure that any impacts would be reduced or eliminated. The Planning Area encompasses 19,198 acres of designated critical habitat within the Planning Area (USFWS 1990). This accounts for only 2.0% of the total Planning Area.

Minerals: Potash

No Surface occupancy stipulations restrict potash developments from occurring within 500 feet of intermittent and perennial streams, rivers, riparian areas, wetlands, water wells, and springs. As a result, direct impacts to the endangered Colorado River fish species are not likely to occur. However, indirect impacts may occur to the species. If potash activities were to occur within the watershed of listed fish species, impacts may include the loss/fragmentation of habitat, erosion and sediment yield which can degrade the quality of the habitat, and the increased potential for introduction of noxious weeds. The primary indirect effect is the change in surface water flow regimes associated with sedimentation and precipitation. Surface disturbance associated with the construction of roads and production facilities may lead to increased soil erosion, and storm water runoff with heavy concentrations of sediment.

Disturbance or removal of upland vegetation within watersheds containing potential habitat for listed fish species could result in increased erosion and sediment that degrade water quantity (reducing ground water discharge into the stream, river, or lake) and water quality (changes in water chemistry, such as pH and dissolved oxygen, temperature, sediment, contamination and nutrient availability).

Although these impacts could occur from the implementation of potash development actions. Many of the management actions included in the Moab MLP are meant to reduce or eliminate

these impacts to resource values. Protective management actions include but are not limited to the following:

- Phased potash leasing in specific areas to minimize conflicts and to test the feasibility of solution mining for deep deposits of potash on public lands within the Planning Area.
- Removal of areas available for potash leasing.
- Application of baseline CSU stipulations for potash prospecting permits, preference right leases and competitive leases.
- Allowance of lease cancellation if after ten years from the date of the lease issuance, potassium or related products are not being produced.

Potash leasing activities may occur near designated critical habitat for the Colorado River fish species. However, leasing stipulations such as the prevention of water depletions to the upper Colorado system would ensure that any impacts would be reduced or eliminated. The Planning Area encompasses 19,198 acres of designated critical habitat within the Planning Area (USFWS 1990). This accounts for only 2.0% of the total Planning Area.

Air Quality

Mineral management actions associated with air quality seek to maintain or improve existing air quality related values (e.g. visibility) by ensuring that all authorized uses on public lands comply with and support Federal, State, and local laws and regulations for protecting air quality. As a result, the air quality program is a support program that does not directly result in additional emissions or air quality degradation. Implementing mineral management decisions that require air quality monitoring and compliance support program helps to ensure compliance for activities of other programs and helps to ensure that mineral projects are implemented in a way that best manages, maintains and/or controls air quality. No direct or indirect impacts to the endangered Colorado River fish species are expected from mineral management actions developed for air quality resources. Activities or programs are analyzed for potential impacts to air quality resulting from authorized actions. For example, potential impacts to air quality from a proposed action such as the construction of access roads to oil and gas development sites would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

Cultural Resources

Activities that occur under the cultural resources program which may affect the four endangered Colorado River fish include additional monitoring, data collection or mitigation. Although unlikely to occur in the rivers which house the endangered Colorado River fish because mineral actions are not allowed to occur in waterways or wetland areas, activities which require human presence and the use of mechanical equipment within the watershed could result in soil erosion or removal of upland vegetation cover. The increased erosion could result in increased sediment which can degrade water quality, reduce nutrient value, and change water chemistry. Any data collection, mitigation, or monitoring activities would be short term in nature and would only be performed by BLM approved employees and would not likely result in any adverse effects to the species.

Lands and Realty

The NSO stipulation along U.S. Highway 191 in Moab Canyon would restrict surface disturbance and would not directly affect endangered Colorado River fish species.

The NSO stipulation for mineral leasing within the area of the existing Three Rivers mineral withdrawal for locatable minerals would restrict surface disturbances in this area and may benefit the endangered Colorado River fish species if this species occupied the area.

CSU stipulation within one mile of the high use filming locations for visual assessment and the disallowance of heavy trucks (over 20 tons) for on the Needles Road for mineral operations would have negligible impacts.

Lands with Wilderness Characteristics

If mineral activities were to occur within lands with wilderness characteristics, the baseline CSU stipulation developed for areas with sensitive resources would be executed. Implementation of this baseline CSU may help to reduce impacts to endangered Colorado River fish by reducing surface disturbance, noise and sedimentation in suitable habitats. Implementing this protective and support program helps to ensure compliance for activities of other programs, and helps to ensure that projects are implemented in a way that best manages, maintains and/or protects lands with wilderness characteristics. If Mineral activities were to occur within lands with wilderness characteristics, extra CSU stipulations would be implemented. The additional CSU stipulations would ensure the protection of the endangered Colorado River fish species.

Natural Areas

The main objectives of the Natural Areas program is to protect, preserve and maintain wilderness characteristics of Natural Areas. As a result, the natural areas program is a support program that does not directly result in surface disturbing activities. Implementing this monitoring and support program helps to ensure compliance for activities of other programs and helps to ensure that projects are implemented in a way that best manages, maintains and/or controls natural areas. Activities or programs are analyzed for potential impacts to natural areas resulting from authorized actions. For example, potential impacts to natural areas from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

The only minerals management action developed for natural areas is the implementation of a NSO stipulation for mineral leasing to lands managed as Natural Areas. If lands in natural areas were leased, this would reduce or eliminate impacts from mineral development activities in this area and would also reduce impacts to the endangered Colorado River fish species and their habitats if the natural areas were also in suitable endangered Colorado River fish habitats.

Paleontological Resources

Minerals management actions developed for paleontological resources include the implementation of CSU stipulations which requires monitoring and the cessation of project activities until it is determined if a paleontological site can be avoided, protected or needs to be evacuated. CSU stipulations would only be initiated when a mineral development is not expected to add additional impacts to threatened and endangered species except if excavation was needed. If excavation occurs within the flood basin of endangered Colorado River fish species, these activities could increase loss/fragmentation of habitat, erosion and sediment yield which can degrade the quality of the habitat, and potential for introduction of noxious weeds, which could increase the stress levels of the fish species. Any data collection, mitigation, or monitoring activities would be short term in nature, would only be performed by BLM approved employees and would not likely result in any additional adverse effects to the species. In fact, the implementation of CSU stipulations may benefit the species through additional monitoring.

Recreation

Mineral management actions developed for areas where recreation use occurs primarily include NSO stipulations. Preventing mineral resource actions which disturb the surface would not negatively affect threatened and endangered species. Although extremely unlikely, the prevention of surface disturbing activities in areas with high recreational values may inadvertently benefit the endangered Colorado River fish species, if the species also resides in the same area. The other recreation management action includes the implementation of Baseline CSU stipulations. These stipulations are listed under the minerals program. As such any effects to the species resulting from the Baseline CSU stipulations are analyzed under the minerals program.

Riparian Resources

Only one mineral management action, the implementation of NSO in riparian areas, has been developed for riparian resources. The NSO management action is intended to avoid or minimize disturbance or loss to riparian areas. The NSO stipulations will be applied within a variety of riparian areas identified in the Moab MLP. The NSO stipulation has the potential to impact the endangered Colorado River fish in a beneficial way by reducing human caused impacts and eliminating surface disturbances which could cause sedimentation and increased erosion in riparian areas.

Soil and Water Resources

Beneficial impacts to the endangered Colorado River fish can indirectly occur as a result of activities that are meant to maintain or improve soil and water quality/quantity through reclamations and rehabilitations. These activities would provide long-term benefits for the species habitat through improved water quality and water quantity.

Although most of the activities included within the soil and water resource program would not affect the species or may even provide inadvertent beneficial effects, some actions, if not managed appropriately could cause negative effects. Activities such as monitoring, mitigation and restoration of soils have the potential to negatively impact the endangered Colorado River fish species on a short term basis. Impacts to potentially suitable habitat may result from land treatments on watersheds meant to reduce soil loss and the reclamation of surface disturbances or unnecessary roads. These actions may increase erosion and sedimentation which can degrade habitat quality and quantity downstream. Although impacts to the species could occur from reclamation, mitigation, monitoring actions, leasing stipulations (Appendix A) and associated BMP's (Appendix B) would prevent any impacts to the species.

Special Designations

Mineral management actions within special designation areas require NSO stipulations, CSU stipulations within various areas of interest and the closure of specified areas to mineral leasing. If lands in special designation areas were leased under these conditions, this would reduce or eliminate impacts from mineral development activities. It would also reduce impacts to the endangered Colorado River fish species and their habitats, if the special designation areas also were in suitable Colorado River fish species habitats.

Special Status Species

There are multiple special status species actions which are meant to protect threatened and endangered species from mineral developments. Some of the management actions include the implementation of BMP's, implementation and compliance of conservation measures,

compliance with BLM manual 6840, application of CSU stipulations, application of NSO stipulations and the preclusion of mineral leasing within various distances of threatened and endangered species. No surface disturbing actions would occur as a result of special status species actions.

In addition to the general protection measures, there are also species specific protection measures which provide additional protections for the endangered Colorado River fish species. These protective measures include additional surveys and monitoring, closed loop drilling, avoidance and minimization measures, enhancement of riparian habitat, avoidance of water depletions, initiation of section 7 consultation and conducting watershed analysis. These additional protection measures would ensure that adverse impacts to the species would be avoid and/or minimized.

Vegetation

Mineral management actions developed to facilitate vegetation provide management prescriptions during times of drought to minimize impacts to vegetative communities, control invasive and non-native weed species and prevent the introduction of new invasive species. No on the ground surface disturbing actions are prescribed within the program.

Baseline CSU stipulation and BMPs developed for areas with sensitive resources such as sagebrush/steppe and potential for noxious weeds would also be implemented to facilitate vegetation resources. Implementation of these baseline CSUs and BMPs may help to reduce impacts to the endangered Colorado River fish species by maintaining viable habitat and reducing downstream sediment and erosion which could affect the species negatively through reduced water quantity or quality, altered PH value, and reduced nutrient value.

Visual/Auditory Resource Management

Mineral management actions developed for visual and auditory resources would help protect and preserve the scenic values and soundscapes within the Planning Area. The application of CSU's, NSO's, closing of targeted areas to mineral leasing, minimization requirements, and application of limitations on lighting and noise would not negatively affect threatened and endangered species. It would likely contribute beneficial impacts. In fact, the management actions are intended to prevent or reduce surface disturbing actions which would result from minerals resource actions. These actions would benefit the species by preventing additional ground disturbances which could cause increased soil erosion and sedimentation.

Wildlife and Fisheries

Mineral actions which require the protection of wildlife and fisheries resources such as the implementation of BMP's, timing limitations, CSU stipulations and the restriction of surface disturbing activities are intended to guide or advise the minerals programs when an action may disturb wildlife and fishery resource values. Most of these actions do not result in surface disturbing activities and would not negatively affect threatened and endangered species. However, some CSUs such as the bighorn sheep CSU which precludes drilling operations and permanent facilities in lambing and rutting habitat would also reduce impacts from mineral developments to the endangered Colorado River fish species and their habitats. As a result, these actions may inadvertently provide additional protections for the endangered Colorado River fish species.

Wildlife and fishery actions which call for water developments and habitat improvements within desert bighorn sheep habitat when mineral leasing actions occur, may affect the endangered

Colorado River fish species. This management action is intended to compensate for the loss of desert bighorn sheep habitat during the execution of a mineral lease. Although disturbances may occur, the species may also benefit from water developments and habitat improvements. Although riparian habitat upgrades would likely have long-term beneficial impacts to the endangered Colorado River fish, short-term negative effects associated with these activities could occur. These actions may increase erosion and sedimentation which can degrade habitat quality and quantity downstream.

5.5.2 Effects Determination

It is important to note that only 2.0% of the Planning Area includes designated critical habitat and potential habitats for the endangered Colorado River Fish. As such, any impacts to the species resulting from the Moab MLP would be minimal.

Although impacts to the fish species could occur, leasing stipulations (Appendix A) and associated BMPs (Appendix B) would help to reduce or prevent any impacts. When a lease is issued, the lessee/operator would be given notice in order to minimize effects to critical habitat of endangered fish in the Colorado and Green Rivers. In addition, all associated back waters would not be allowed.

Per leasing stipulations, before and during any action, the lessee/operator would be required to provide up to date data or provide habitat suitability and occupancy surveys conducted by a qualified individual(s). Leasing stipulations would require that minimization measures would be evaluated to achieve the best results. Water production would be managed to avoid loss or disturbance and ensure maintenance or enhancement of riparian habitat. Watershed shed and major tributary analysis would also be required to determine toxicity risk from permanent facilities. In areas adjacent to 100 year floodplains, particularly in systems prone to flash floods, the lessee must analyze the risk for flash floods to impact facilities, use closed loop drilling and pipeline burial or suspension according to the Utah Oil and Gas Pipeline Crossing Guidance to minimize the potential for equipment damage and resulting leaks or spills.

Management decisions close approximately thirty percent of the species' habitat to mineral activities and manage one hundred percent of this habitat with a NSO stipulation. Despite these management decisions, as well as measures included in Appendix A and Appendix B, impacts to the fish species may occur. These impacts are likely to directly and indirectly affect riparian habitat (and therefore, endangered Colorado River fish species habitat) through loss and fragmentation of habitat, erosion and sediment yield and leaks of petroleum products which can degrade the quality of the habitat. Risks associated with Minerals decisions have some potential to impact the species. Therefore, implementation of the Moab MLP **"May Affect and is Likely to Adversely Affect"** the endangered Colorado River fish and their designated critical habitat.

5.6 JONES CYCLADENIA

Minerals: Oil and Gas

Within the Planning Area the Jones cycladenia model depicts that approximately 396,200 acres (50 percent) may offer medium to high potential for finding Jones cycladenia on federal lands. Of this, 29 percent is found in Grand County (225,000 acres) where the Service has indicated this species known to or is believed to occur. Impacts from oil and gas development activities may include, but is not limited to direct mortality (e.g., from construction equipment and vehicles in

occupied habitats), habitat loss and/or modification (e.g., from construction of well pads, pipelines, associated facilities, etc. in occupied and suitable habitats) and habitat disturbance of the species' pollinators.

Indirect effects may result from a change in surface water flow regimes associated with sedimentation and precipitation. Surface disturbance associated with the construction of well pads, access roads, pipelines, etc. may lead to increased soil erosion and storm water runoff with heavy concentrations of sediment. Populations of Jones cycladenia could become fragmented by access roads and pipelines associated with oil and gas production. In addition, the proliferation of access roads and pipelines within the Planning Areas may limit seed distribution and pollinator access to plant populations. Increased road densities could also make access to remote areas easier for OHVs, increasing surface disturbance and illegal collection of rare plants.

Although these impacts could occur from the implementation of minerals management actions. Many of the management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Maximization of lease parcels to reduce redundant infrastructure.
- Application of baseline CSU stipulations in an effort to reduce conflicts with other resources.
- Application of NSO Stipulations in sensitive resource areas.
- Development of BMPs to minimize potential impacts associated with minerals development.

Minerals: Potash

Impacts from potash development include direct mortality (e.g., from construction equipment and vehicles in occupied habitats), habitat loss and/or modification in occupied and suitable habitats), and habitat disturbance of the species' pollinators.

Indirect effects may result from a change in surface water flow regimes associated with sedimentation and precipitation. Surface disturbance associated with the construction of access roads, production facilities and mining equipment, may lead to increased soil erosion and storm water runoff with heavy concentrations of sediment. Populations of Jones cycladenia could become fragmented by access roads and facilities associated with potash collection. In addition, the proliferation of access roads within the Planning Areas may limit seed distribution and pollinator access to plant populations. Increased road densities could also make access to remote areas easier for OHVs, increasing surface disturbance and illegal collection of rare plants.

Although these impacts could occur from the implementation of potash development actions. Many of the management actions included in the Moab MLP are meant to reduce or eliminate these impacts to resource values. Protective management actions include but are not limited to the following:

- Phased potash leasing in specific areas to minimize conflicts and to test the feasibility of solution mining for deep deposits of potash on public lands within the Planning Area.
- Removal of areas available for potash leasing.

- Application of the baseline CSU stipulation for potash prospecting permits, preference right leases and competitive leases.
- Allowance of lease cancellation if after ten years from the date of the lease issuance, potassium or related products are not being produced.

Air Quality

Mineral management actions associated with air quality seek to maintain or improve existing air quality and air quality related values (e.g. visibility) by ensuring that all authorized uses on public lands comply with and support Federal, State, and local laws and regulations for protecting air quality. As a result, the air quality program is a support program that does not directly result in additional emissions or air quality degradation. Implementing mineral management decisions that require air quality monitoring and compliance support program helps to ensure compliance for activities of other programs, helps to ensure that mineral projects are implemented in a way that best manages, maintains and/or controls air quality. No direct or indirect impacts to the Jones cycladenia are expected from mineral management actions developed for air quality resources. Activities or programs are analyzed for potential impacts to air quality resulting from authorized actions. For example, potential impacts to air quality from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

Cultural Resources

Mineral management actions associated with cultural resources which may affect Jones cycladenia include additional monitoring, data collection or mitigation. Although unlikely to occur in the semi barren areas occupied by Jones cycladenia, activities could increase human presence in otherwise remote areas. Increased human presence could cause the direct crushing or trampling of the plants by humans or vehicles. Indirect mortality could be caused from increases in erosion and sedimentation. Surface disturbance (e.g., crushing of vegetation and soil disturbance) has the potential to render native plant community's habitats susceptible to weed establishment and can modify soil conditions to the point where they are unsuitable for establishment by native species. Soil compaction resulting from increased traffic and the use of heavy machinery may make it difficult for water to penetrate the soil and for seeds to germinate.

It is important to note that any cultural resource actions are typically less than one acre in size. Any disturbances would be short term in nature and isolated in location and the number of individuals which would be working to protect the cultural resources. Although impacts to the species could occur from cultural resources actions, leasing stipulations (Appendix A) and associated BMP's (Appendix B) would prevent any impacts to the species.

Lands and Realty

Lands and realty actions include a NSO stipulation for mineral leasing within the area of the existing Three Rivers mineral withdrawal for locatable minerals, a CSU stipulation within one mile of high use filming locations for visual assessment and the disallowance of heavy trucks (over 20 tons) for on the Needles Road for mineral operations.

Lands and realty management actions would not directly result in additional disturbances to the surface. As a result, lands and realty actions would not affect Jones cycladenia.

Lands With Wilderness Characteristics

If mineral activities were to occur within lands with wilderness characteristics, the baseline CSU stipulation developed for areas with sensitive resources would be executed. Implementation of this baseline CSU may help to reduce impacts to Jones cycladenia through design changes to oil and gas facilities to reduce impacts, reclamation of roadways and oil pads, and the restoration of physical landforms.

Natural Areas

The main objectives of the Natural Areas program is to protect, preserve, and maintain wilderness characteristics of Natural Areas. As a result, the natural areas program is a support program that does not directly result in surface disturbing activities. Implementing this monitoring and support program helps to ensure compliance for activities of other programs and helps to ensure that projects are implemented in a way that best manages, maintains and/or controls natural areas. Activities or programs are analyzed for potential impacts to natural areas resulting from authorized actions. For example, potential impacts to natural areas from a proposed action such as the construction of access roads to oil and gas development sites, would be analyzed as part of the energy and minerals program in the environmental analysis prepared for that action.

The only minerals management action developed for natural areas is the implementation of a NSO stipulation for mineral leasing to lands managed as Natural Areas. If lands in natural areas were leased, this would reduce or eliminate impacts from mineral development activities in this area and would also reduce impacts to Jones cycladenia and their habitats if the natural areas also occurred in suitable Jones cycladenia habitats.

Paleontological Resources

Minerals management actions developed for paleontological resources include the implementation of CSU stipulations that requires monitoring and the cessation of project activities until it is determined if a paleontological site can be avoided, protected or needs to be evacuated. CSU stipulations would only be initiated when a mineral development is not expected to add additional impacts to threatened and endangered species except if excavation was needed. If excavation occurs in Jones cycladenia habitats these activities could increase human presence in otherwise remote areas and may increase the chance of trampling or crushing of the plant and surrounding habitat.

Recreation

Mineral management actions developed for areas where recreation use occurs primarily include NSO stipulations. Preventing mineral resource actions which disturb the surface would not negatively affect threatened and endangered species. Although extremely unlikely, the prevention of surface disturbing activities in areas with high recreational values may inadvertently benefit Jones cycladenia, if the species also resides in the same area. The other recreation management action includes the implementation of Baseline CSU stipulations. These stipulations are listed under the minerals program. As such, any effects to the species resulting from the Baseline CSU stipulations are analyzed under the minerals program.

Riparian Resources

Only one mineral management action, the implementation of NSO in riparian areas, has been developed for riparian resources. The NSO management action is intended to avoid or minimize disturbance or loss to riparian areas. The NSO stipulations will be applied within a variety of

riparian areas identified in the Moab MLP. The NSO stipulation has the potential to impact Jones cycladenia in a beneficial way by reducing human caused impacts and eliminating surface disturbances in riparian areas which could increase sedimentation or erosion.

Soil and Water Resources

Beneficial impacts to Jones cycladenia can indirectly occur as a result of activities that are meant to maintain or improve soil and water quality/ quantity through reclamations and rehabilitations. These activities would provide long-term benefits for the species habitat through reduced erosion and sedimentation and improved water quality and water quantity.

Most of the activities included within the soil and water resource program would not affect the species and may even provide inadvertent beneficial effects, some actions, if not managed appropriately could cause negative effects. Activities such as monitoring, mitigation and restoration of soils have the potential to negatively impact Jones cycladenia on a short term basis. Impacts to potentially suitable habitat may result from land treatments on watersheds meant to reduce soil loss and the reclamation of surface disturbances or unnecessary roads. These actions may increase erosion and sedimentation which can degrade habitat quality and quantity downstream. The chance of human cause trampling or crushing of the plants may also increase.

Although impacts to the species could occur from reclamation, mitigation, and monitoring actions, leasing stipulations (Appendix A) and associated BMPs (Appendix B) would prevent any impacts to the species.

Special Designations

Mineral management actions within special designation areas require NSO stipulations, CSU stipulations within various areas of interest and the closure of specified areas to mineral leasing. If lands in special designation areas were leased under these conditions, this would reduce or eliminate impacts on Jones cycladenia from mineral development activities.

Special Status Species

There are multiple special status species actions which are meant to protect threatened and endangered species from mineral developments. Some of the management actions include the implementation of BMP's, implementation and compliance of conservation measures, compliance with BLM manual 6840, application of CSU stipulations, application of NSO stipulations and the preclusion of mineral leasing within various distances of threatened and endangered species. No surface disturbing actions would occur as a result of special status species actions.

In addition to the general protection measures, there are also species specific protection measures which provide additional protections for Jones cycladenia. Specific management action for Jones cycladenia include site specific surveys and monitoring, additional section 7 consultations, pre project habitat assessments, distance restrictions, reduction of well pad and facility size, limiting road access routes and minimization efforts. Because the management prescriptions outlined in the program guide or advise other programs to provide additional protections for threatened, endangered, candidate and special status species no negative impacts are anticipated to occur as a result of special status species actions.

Vegetation

Mineral management actions developed to facilitate vegetation provide management prescriptions during times of drought, to minimize impacts to vegetative communities, control invasive and non-native weed species and prevent the introduction of new invasive species. No on the ground surface disturbing actions are prescribed within the program.

Baseline CSU stipulation and BMPs developed for areas with sensitive resources such as sagebrush/steppe and potential for noxious weeds would also be implemented to facilitate vegetation resources. Implementation of these baseline CSUs and BMPs may help to reduce impacts Jones cycladenia by maintaining viable habitat, reducing human related impacts on individual plants and surrounding soils.

Visual/Auditory Resource Management

Mineral management actions developed for visual and auditory resources would help protect and preserve the scenic values and soundscapes within the Planning Area. The application of CSU's, NSO's, closing of targeted areas to mineral leasing, minimization requirements, application of limitations on lighting and noise would not negatively affect threatened and endangered species. In fact, they would likely contribute beneficial impacts. The implementation of CSU's and NSO's within Jones cycladenia habitat would reduce human caused impacts, including, the direct mortality of the species through the crushing and trampling of plant individuals.

Wildlife and Fisheries

Mineral actions which require the protection of wildlife and fisheries resources such as the implementation of BMP's, timing limitations, CSU stipulations and the restriction of surface disturbing activities, are intended to guide or advise the minerals programs when an action may disturb wildlife and fishery resource values. Most of these actions do not result in surface disturbing activities and would not negatively affect threatened and endangered species. However, some CSUs such as the bighorn sheep CSU which precludes drilling operations and permanent facilities in lambing and rutting habitat would also reduce impacts from mineral developments to Jones cycladenia and their habitats. As a result, these actions may inadvertently provide additional protections for Jones cycladenia.

Management actions which call for water developments and habitat rehabilitations and mitigations within desert bighorn sheep habitat when mineral leasing actions occur may affect Jones cycladenia. This management action is intended to compensate for the loss of desert bighorn sheep habitat during the execution of a mineral lease. Although these actions would likely have long-term beneficial impacts for Jones cycladenia, short-term negative effects associated with these activities could occur. These actions may cause soil disturbances and increased trailing of wildlife in remote areas. During construction efforts, the trampling and crushing of plant individuals by workers and equipment may occur. These activities could also disrupt the habitat of pollinators for Jones cycladenia.

5.6.2 Effects Determination

Although impacts to the species could occur, leasing stipulations (Appendix A) and associated BMPs (Appendix B) would prevent any impacts to the species. When a lease is issued, the lessee/operator would be given notice in order to minimize effects to Jones cycladenia. Per leasing stipulations, before and during any action, the lessee/operator would be required to

provide habitat suitability and occupancy surveys conducted by a qualified individual(s) which would be valid for one year.

Leasing stipulations would also require avoidance and minimization measures. Measures would include but are not limited to the following:

- 300' buffers around the outermost boundary of delineated Jones cycladenia occupied habitat and individual plants.
- Conduct occupancy surveys when plants are best detected (April 15th-June 5th).
- Minimize surface impacts by utilizing multiple wells per pad, maximizing well pad spacing, and co-location of facilities
- Installing signage to limit off-road travel in sensitive areas and direct traffic to ROW areas.
- Rehabilitation of disturbed areas with native species.
- Apply dust abatement actions with only water.
- Avoid water flow and sedimentation, by installing silt fences, hay bales, and similar structures.
- Construction activities could only occur from April 15th through June 15th within occupied habitat.

Management decisions close one hundred percent of the species' known occupied habitat to mineral activities and lease notices will require 249,686 acres of potential habitats as indicated by the Jones cycladenia model to be assessed for suitability. Suitable habitats will be protocol surveyed as applicable. The Service will be contacted and any individual or population detections of Jones cycladenia will be protected according to the Service's recommendation. Despite these management decisions, as well as measures included in Appendix A and Appendix B, impacts to populations and individual plants that potentially occur outside of known occupied habitats may occur. These impacts are likely to directly and indirectly affect the species through loss and fragmentation of habitat, erosion and sediment yield which can degrade the quality of the habitat. Risks associated with minerals decisions identified in the Moab MLP, have some potential to impact the species; therefore, implementation of the Moab MLP **"May Affect and is Likely to Adversely Affect"** Jones cycladenia.

6.0 CUMULATIVE IMPACTS

Cumulative effects include future State, Tribal, local, or private actions that are reasonably certain to occur in the Planning Areas. The Planning Area is interspersed with parcels of non-federally managed lands including Tribal, State, and privately owned lands. Activities taking place on these lands do have the potential to cumulatively impact natural resources within the Planning Area.

6.1 CUMULATIVE IMPACTS OF FUTURE NON-FEDERAL ACTIVITIES

Existing and proposed activities on non-federal lands in the Planning Areas that have the potential to cumulatively affect threatened and endangered species may include:

- Livestock grazing
- ORV use
- Recreational developments
- Development of energy and mineral resources
- Herbicide and insecticide treatments
- Surface disturbing activities
- Road developments
- Installation of telephone and electricity cables
- Conversion of agricultural lands to residential and commercial uses
- Housing developments
- Infrastructure developments
- Management of adjacent lands

It is likely that the cumulative impacts resulting from the implementation of the MLP would result in some increased level of cumulative impact greater than those non-discretionary actions alone. All future BLM-authorized management actions and developments would consider the cumulative impact of project implementation in conjunction with identified project-level and site-specific parameters. This would include the analyses of non-federal actions in the action area, and would provide a more meaningful cumulative impact analysis than can be provided at the LUP level.

The following analysis focuses on cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a); the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur on, or in proximity to, the Planning Area.

California condor, Mexican spotted owl, Southwestern willow flycatcher, Western yellow-billed cuckoo, Endangered Colorado River Fish, and Jones cycladenia

As public lands within the Planning Area are interspersed and bordered by Tribal, State, and private lands, activities within these non-federally managed lands are likely to affect natural resources within BLM managed areas. Future land uses within these Tribal, State, and private lands are likely to include water development (dams and irrigation projects), energy and mineral development, livestock grazing, recreational development and use, invasive species management, and wildlife habitat management. Of these, oil, gas, and potash development on State and private lands represent a significant source of future activity within the state of Utah. Quantified data on the existing and future extent of these land uses are not available, but some

level of these land uses are reasonably certain to occur. Where these existing and future activities on non-federal lands that interface with the above listed species habitats, they would cumulatively add to the impacts of activities authorized in the Planning Area.

7.0 SUMMARY AFFECT OF DETERMINATIONS

7.1 SUMMARY OF AFFECT DETERMINATIONS

Table 3 Summary of Affect Determinations

Program	Moab MLP
California Condor (non-essential, experimental Status)	NCFL
California Condor (Endangered Status)	NLAA
Mexican spotted owl	LAA
Mexican spotted owl and designated critical habitat	LAA
Southwestern willow flycatcher	LAA
Western yellow-billed cuckoo	LAA
Colorado River Fish	LAA
Designated critical habitat - Colorado pikeminnow	LAA
Designated critical habitat- Razorback sucker	LAA
Jones cycladenia	LAA
Navajo Sedge	LAA

NE- No Effect

LAA- May Affect, Likely to Adversely Affect

NLAA- May Affect, Not Likely to Adversely Affect

NI- No Impact

NCFL- Not Likely to Contribute to the Need for Federal Listing

CFL- Likely to Contribute to the Need for Federal Listing

8.0 REFERENCES

- AET Environmental and Buys and Associates. 2003. Final Programmatic Biological Assessment of Southwestern Willow Flycatcher (*Empidonax traillii extimus*) on Utah Bureau of Land Management Lands. Prepared for the Bureau of Land Management and U.S. Fish & Wildlife Service.
- AET Environment and Buys and Associates. 2003. Final Programmatic Biological Assessment of Mexican Spotted Owl (*Strix occidentalis lucida*) on Utah Bureau of Land Management Lands. Prepared for the Bureau of Land Management and the U.S. Fish & Wildlife Service.
- Baich, P.J., and C.J. O. Harrison. 1997. A guide to the nests, eggs, and nestlings of North American Birds, Second Ed. Academic Press, San Diego. 347 pp.
- Beal, F.E.L. 1912. Food of our more important flycatchers. U.S. Bureau of Biological Survey, Bulletin 4. Washington, D.C. 67 pp.
- Behle, W.H. and H.G. Higgins. 1959. The birds of Glen Canyon. In: Ecological Studies of Flora and Fauna in Glen Canyon (A.M. Woodbury, ed.) Univ. Utah Anthropol. Pap. 40 (Glen Canyon Series No. 7), pp 107-133.
- Behnke, R. J. 1973. The greenback cutthroat trout *Salmo clarki stomias*. Status report. U.S. Fish and Wildlife Service. Albuquerque. New Mexico.
- Behnke, R. j. and M. Zarn. 1976. Biology and management of threatened and endangered western trout. USDA Forest Service, Rocky Mountain Forest and Range Experimental Station. General Technical Report RM-28.
- Behnke, R. J. 1979. Monograph of the native trouts of the genus *Salmo* of western North America. U.S. Fish and Wildlife Service, Denver. Colorado.
- Behnke, R.J. 1984. Greenback cutthroat trout, *Salmo clarki stomias*. Trout.
- Belsky, A. J., A. Mazke, S. Uselman. 1999. Survey of livestock influences on stream and riparian ecosystems in the Western United States. J. Soil and Water Cons. 54: 419-431.
- Bent, A.C. 1960. Life histories of North American flycatchers, larks, swallows and their allies. Dover Press, New York, New York. 555 pp.
- Biological and Conservation Database. 2002. Utah Division of Wildlife Resources, The Nature Conservancy and NatureServe.
- Blackburn, W.E. 1984. Impacts of grazing Intensity and Grazing Systems of Vegetation Composition and Production. In: National Research Council and National Academy of Sciences. Developing Strategies for Rangeland Management: A Report Prepared by the Committee on Developing Strategies for Rangeland Management. Westview Press, Boulder, CO.
- Braun, C.E., O.O. Oedekoven, and C.L. Aldridge. 2002. Oil and gas development in western North America: Effects on sagebrush steppe avifauna with particular emphasis on sage-grouse. North American and Natural Resources Conference. Transactions 67:337-349.

- Brown D.E., and C.H. Lowe. 1980. Map: Biotic communities of the Southwest. Rocky mountain Forest and Range Expt. Sta. Genera, Tech. Report RM-78, USDA Forest Service.
- Brown, B.T. 1991. Status of Nesting Willow Flycatchers along the Colorado River from Glen Canyon Dam to Cardenas Creek, Arizona. Endangered Species Report No. 20 to the U.S. Fish and Wildlife Service, Phoenix, Arizona. 34 pp.
- Browning, M.R. 1993. Comments on the taxonomy of *Empidonax traillii* (willow flycatcher). Western Birds 24:241-257.
- Bureau of Land Management. 2001. BLM Manual 6840, Special Status Species Management.
- Bureau of Land Management. 2004. National Sage-Grouse Habitat Conservation Strategy.
- Bureau of Land Management. 2005. Utah Land Use Plan Amendment for Fire and Fuels Management Environmental Assessment, EA UT-USO-04-01. Finding of No Significant Impact and Decision Record.
- Carroll, J. 2004. Personal communication. U.S. Bureau of Land Management Threatened and Endangered Species Coordinator.
- Clary, W.P. and B.F. Webster. 1989. Managing Grazing of Riparian Areas in the Intermountain Region. USDA for. Serv. Gen. Tech. Rep. INT-263, Ogden, UT.
- Clark, A. H. 1991. Status Surveys of Selected Land and Freshwater Gastropods in Utah. Unpublished Report. USFWS. Denver, Colorado.
- Cooper, J.G. 1890. A doomed bird. Zoe 1:248-249.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. La Roe, Eds. 1979. Classification of wetlands and deepwater habitats of the United States. Fish and Wildlife Service, U .S. Dept. of the Interior, Washington, D.C.
- Cresto, J. and Riddle, P., J. 2002. Tracking Table for Mexican Spotted Owl for Moab FO Planning Area. Bureau of Land Management, Moab FO, Moab, UT.
- Cronquist, A. 1947. Revision of the North American species of *Erigeron*, north of Mexico. Brittonia.
- Cronquist, A. 1994. Volume 5, Asterales, intermountain flora; vascular plants of the Intermountain West, U.S.A. The New York Botanical Garden, Bronx, New York.
- DeLoach, C. J. 1991. Saltcedar, an exotic weed of western North American riparian areas: A review of its taxonomy, biology, harmful and beneficial values, and its potential for biological control. Report to the Bureau of Reclamation, Boulder City, Nevada.
- Dryer, D.D., J.C. Buckhouse, and W.S. Huey. 1984. Impacts of Grazing Intensity and Specialized Grazing Systems on the Use and Value of Rangeland: Summary and Recommendations. In: National Research Council and National Academy of Sciences. Developing Strategies for Rangeland Management: A Report Prepared by the Committee on Developing Strategies for Rangeland Management. Westview Press, Boulder, CO.
- Durrant, S.D. 1952. Mammals of Utah. Univ. Kansas Publs., Mus. Nat. History, Lawrence, KS.

- Earhart, C. M., and N. K. Johnson. 1970. Size dimorphism and food habits of North American owls. *Condor* 72:251-264.
- Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1988. *The birder's handbook: A field guide to the natural history of North American birds*. Simon & Schuster, New York.
- Famolaro, Peter. 1998. Endangered/threatened species monitoring report. Prepared for the U.S. Fish and Wildlife Service, Carlsbad Field Office, Carlsbad, California.
- Federal Register, August 31, 2004. Vol.69, No.168. Final Designation of Critical Habitat for the Mexican Spotted Owl.
- Finch, M.F., J.F. Kelly, and J.E. Cartron. 2000. Mitigation and Winter Ecology.
- Finch and S. Stoleson, eds. Status, Ecology and Conservation of the Southwestern Willow Flycatcher. USDA Forest Service.
- Fleischner, T.L. 1994. Ecological Costs of Livestock Grazing in Western North America. *Cons. Biol.* 8:629-644.
- Fletcher, K.W. and H.E. Hollis. 1994. Habitats used, abundance, and distribution of the Mexican spotted owl (*Strix occidentalis lucida*) on National Forest System lands in the southwestern region. USDA for. Serv., Southwestern Region, Albuquerque, NM.
- Forsman, E. D., E.C. Meslow, and M.J. Strub. 1976. Spotted owl abundance in second-growth versus old-growth forest. *Bulletin of the Wildlife Society of Washington*.
- Forsman, E. D. 1981. Molt of the Spotted Owl. *Auk* 98:735-742.
- Furniss, M. J., T. D. Roelofs, and C. S. Yee. 1991. Road construction and maintenance. Pages 297-324 in W. R. Meehan, editor. *Influences of forest and rangeland management on salmonid fishes and their habitats*. American Fisheries Society Special Publication 19, Bethesda, Maryland.
- Ganey, J.L. 1988. Distribution and habitat ecology of the Mexican spotted owls in Arizona. M.S. Thesis Northern Arizona Univ., Flagstaff.
- Gutierrez, R.J., A.B. Franklin, and W.S. Lahaye. 1995. Spotted owl. *Birds of North America* 179: 1-27.
- Hayward, C.L., C. Cottam, A.M. Woodbury, and H.H. Frost. 1976. *Birds of Utah*. Great Basin Naturalist Memoirs 1: 229 pp.
- Hedges, S. 2002. Tracking table of Southwestern Willow Flycatcher for Cedar-Beaver-Garfield-Antimony RMP and Pinyon RMP, Bureau of Land Management, Cedar City Field Office, Cedar City, UT.
- Hermann, F.J. 1970. *Manual of the Carices of the Rocky Mountains and Colorado Basin*. Agricultural Handbook #374, USDA Forest Service.
- Howe, F.P. and M. Hanberg. 2000. Willow flycatcher and yellow-billed cuckoo surveys along the Green and San Juan Rivers in Utah, 2000. Utah Division of Wildlife Resources Publication No. 00-31.
- Howell, J.T. 1949. Three new Arizona plants. *Leaflets of Western Botany* 5(9):148.

- Hubbard, J.P. 1987. The status of the willow flycatcher in New Mexico. Endangered Species Program, New Mexico. Department of Game and Fish, Santa Fe, New Mexico. 29 pp.
- Hughes, J.M. 1997. Taxonomic significance of host-egg mimicry by facultative brood parasites of the avian genus *Coccyzus* (Cuculidae). *Canadian J. Zoology* 75:1380-1386.
- Hughes, J.M. 1999. Yellow-billed cuckoo (*Coccyzus americanus*). The birds of North America, No. 418. A. Poole and F. Gill, eds.). The birds of North America, Inc., Philadelphia, PA. 28 pp.
- Johnsgard, P.A. 1988. North American owls. Smithsonian Inst. Press, Washington D.C.
- Johnson, M.J., A. Brand, H.C. English, C. Michaud, and B. Moore. 1999. Southwestern willow catcher and Western yellow-billed cuckoo surveys along the Colorado River (Dewey Bridge—Canyonlands National Park Northern Boundary) and Green River, Utah—Canyonlands National Park boundary) 1999. U.S. Geological Survey report to the U.S. Bureau of Reclamation and the Utah Division of Natural Resources.
- Johnson, M.J., A. Brand, H.C. English, C. Michaud, and B. Moore. 1999. Southwestern willow catcher and Western yellow-billed cuckoo surveys in the Canyonlands National Park along the Colorado and Green Rivers, 1999. U.S. Geological Survey report to the U.S. Bureau of Reclamation and the Utah Division of Natural Resources
- Keate, N.S. 1996. Quantitative Analysis of Hanging Garden Endemic Species Richness in the Moab Region, Utah. Thesis (Ph.D) dissertation. Department of Geography, University of Utah.
- Knopf, F.L., R.R. Johnson, T. Rich, F. B. Samson, and R.C. Szaro. 1988. Conservation of Riparian Ecosystems in the United States. *Wilson Bull.* 100: 272-284.
- Milchunas, D.G. and W.K. Lauenroth. 1993. Quantitative Effects of Grazing on Vegetation and Soils over a Global Range of Environments. *Ecol. Monogr.* 63: 327-366.
- Moen, C. A., A. B. Franklin, and R. J. Gutierrez. 1991. Age determination of subadult northern spotted owls in northwest California. *Wildl. Soc. Bull.* 19:489-493.
- Kauffman, K. 1996. Lives of North American Birds. Houghton Mifflin Company. New York, NY
- Kennedy, C.E. 1977. Wildlife Conflicts in Riparian Management: Water. In: R.R. Johnson and D.A. Jones, eds.
- Koford, C.B. 1953. The California condor. National Audubon Society Research Report 4:1-154.
- Langridge, S.M. and M.K. Sogge. 1997. Banding of the Southwestern Willow Flycatcher in the White Mountains – 1997 summary report. U.S.G.S. Colorado Plateau Field Station/Northern Arizona University report.
- McCabe, R.A. 1991. The little green bird: ecology of the willow flycatcher. Palmer publications, Inc., Amherst, Wisconsin. 171 pp.
- McCarthy, T.D., C.E. Paradzick, J.W. Rourke, M.W. Sumner, and R.F. Davidson. 1998. Arizona Partners in Flight southwestern willow flycatcher 1997 survey and nest monitoring report. Nongame and Endangered Wildlife Program Technical Report 130. Arizona Game and Fish Department, Phoenix, Arizona.

- McKernan, R.L. and G. Braden. 2001. Status, distribution, and habitat affinities of the Southwestern Willow Flycatcher along the Lower Colorado River, Year 5 – 2000. Report by the San Bernardino County Museum, Redlands, CA.
- National Park Service. 2005. Three Condors to be Released October 4: California condor (*Gymnogyps californianus*) <http://www.nps.gov/grca/media/2003/2-29sep03.htm>.
- Pilsbry, H.A. 1948. Land Mollusca of North America. The Academy of Natural Science of Philadelphia Monographs Vol. II (part 2).
- Pizzimenti, J.J., and G.D. Collier. 1975. *Cynomys parvidens*. Mammal. Species 56:1-2.
- Paradzick, C.E., R.F. Davidson, J.W. Rourke, M.W. Sumner, A.M. Wartell, and T.D. McCarthy. 2000. Southwestern Willow Flycatcher 1999 Survey and Nest Monitoring Report. Technical Report 151. Arizona Game and Fish Department, Phoenix, AZ. 93 pp.
- Parrish, J.R., F.P. Howe, and R.E. Norvell. 1999. Utah Partners in Flight draft conservation strategy. UDWR publication number 99-40. Utah Partners in Flight Program, Utah Division of Wildlife Resources, Salt Lake City, UT.
- Paxton, E., J. J. Owen, and M.K. Sogge. 1996. Southwestern willow flycatcher response to catastrophic habitat loss. Colorado Plateau Research Station. U. S. Geological Survey Biological Resources Division. Northern Arizona University, Flagstaff, Arizona. 12 pp.
- Paxton, E., S. Langridge, and M.K. Sogge. 1997. Banding and population genetics of Southwestern Willow Flycatchers in Arizona - 1997 summary report. U.S.G.S. Colorado Plateau Field Station/Northern Arizona University report.
- Peterson, R.T. and V.M. Peterson. 1990. A field guide to western birds, 3rd ed. Houghton Mifflin, Boston.
- Phillips, A.R. 1948. Geographic variation in *Empidonax traillii*. Auk 65:507-514.
- Proebstel, D. 1993. Genetic variability of greenback cutthroat trout (*Oncorhynchus clarki stomias*): as determined by analysis of meristic characters and restriction fragment length polymorphisms of mitochondrial DNA. Unpublished report. Department of Fishery and Wildlife Biology, Colorado State University. Fort Collins. 10 pp
- Romin, Laura A. and James A. Muck, 2002, "Utah Field Office Guidelines For Raptor Protection From Human And Land Use Disturbances." U.S. Department of Interior, U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City, Utah.
- San Diego Zoo. 2005. Birds: California condor. <http://www.sandiegozoo.org/animalbytes/t-condor.html>.
- Schmitt, N.J. 1995. In Prep. A study of the California condor molt.
- Schultz, T. T. and Leininger, W. C. 1990. Differences in riparian vegetation structure between grazed areas and exclosures. Journal of Range Management 43: 295-299.
- Seutin, G. 1987. Female song in Willow Flycatchers (*Empidonax traillii*). Auk 104: 329-330.
- Sferra, S.J., T.E. Corman, C.E. Paradzick, J.W. Rourke, J.A. Spencer, and M.W. Sumner. 1997. Arizona Partners in Flight southwestern willow flycatcher survey: 1993-1996 summary

- report. Nongame and Endangered Wildlife Program Technical Report 113. Arizona Game and Fish Department, Phoenix, Arizona.
- Sheviak, C.J. 1984. *Spiranthes diluvialis* (Orchidaceae), a new species from the western United States. *Brittonia* 36(1): 8–14.
- Sipes S.D., V.J. Tepedino. 1996. Pollinator Lost? Reproduction by the Enigmatic Jones Cycladenia, *Cycladenia humilis* var. *jonesii* (Apocynaceae). *American Journal of Botany* 84(3):401-409.
- Sipes, S.D., P.G. Wolf. 1997. Clonal Structure and Patterns of Allozyme Diversity in the Rare Endemic *Cycladenia humilis* var. *jonesii*. *American Journal of Botany* 84(3):401-409
- Skovlin, J.M. 1984. Grazing Impacts on Wetlands and Riparian habitat: A Review of our Knowledge. In: National Research Council and National Academy of Sciences. Developing Strategies for Rangeland Management: Report Prepared by the Committee on Developing Strategies for Rangeland management. Westview Press, Boulder, CO.
- Snyder, N.F.R., E.V. Johnson, and D.A. Clendenen. 1987. Primary molt of California condors. *Condor* 89:468-485.
- Sogge, M.K. 1995. Southwestern willow flycatcher (*Empidonax traillii extimus*) monitoring at Tuzigoot National Monument. 1995 progress report to the National Park Service. National Biological Service Colorado Plateau Research Station/Northern Arizona University report.
- Sogge, M.K., R.M. Marshall, S.J. Sferra, and T.J. Tibbitts. 1997. A Southwestern willow flycatcher natural history summary and survey protocol. Technical Report. NPS/NAUCPRS/NRTR-97/12.
- Sogge, M.K., S.J. Sferra, T.D. McCarthey, S.O. Williams, III, and B.E. Kus. 2001. Summary of southwestern willow flycatcher breeding site and territory characteristics - 1999. Prepared for the Southwestern Willow Flycatcher Recovery Team, U.S. Fish and Wildlife Service, Region 2, Albuquerque, NM. November 2000.
- Springer, A.E., and L.E. Stevens. 2009. Spheres of discharge of springs. *Hydrogeology Journal* 17:83-93.
- Stoleson, S.H. and D.M. Finch. 1999. Reproductive success of southwestern willow flycatchers in the Cliff-Gila Valley, New Mexico. Report to Phelps-Dodge Corporation. USDA Forest Service, Rocky Mountain Research Station, Albuquerque, New Mexico.
- SWCA, Inc., Environmental Consultants. 2000. Final report on behavior, ecology, and nest monitoring of southwestern willow flycatchers from 1996 to 1998 along the Verde River, Arizona. Final Report by SWCA, Inc., Environmental Consultants, Salt Lake City, submitted to Phelps Dodge Development Corporation, Phoenix.
- Unitt, P. 1987. *Empidonax traillii extimus*: An endangered subspecies. *Western Birds* 18:137-162.
- US Fish and Wildlife Service. 1987. Navajo Sedge Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. 39pp.
- US Fish and Wildlife Service. 1991. Utah prairie dog recovery plan. US Fish and Wildlife Service, Denver, Colorado.

- U.S. Fish and Wildlife Service. 1994. Utah reed—mustards: clay reed—mustard (*Schoenocrambe argillacea*), Barneby reed-mustard (*Schoenocrambe barnebyi*), shrubby reed—mustard (*Schoenocrambe suffrutescens*) recovery plan. Denver, Colorado. 22 pp.
- U.S. Fish and Wildlife Service. 1995. Recovery Plan for the Mexican Spotted Owl: Vol I. Albuquerque, New Mexico.
- U.S. Fish and Wildlife Service. 1996. California condor recovery plan, third revision. Portland, Oregon. 62 pp.
- U.S. Fish and Wildlife Service. 1998. Proposed habitat division line between subspecies.
- U.S. Fish and Wildlife Service. 1998. Greenback cutthroat trout recovery plan. U.S Fish and Wildlife Service, Denver. Colorado.
- U.S. Fish and Wildlife Service. 2001. Southwestern willow flycatcher Recovery Plan. Albuquerque, New Mexico. Prepared by Southwestern Willow Flycatcher Recovery Team Technical Subgroup.
- U.S. Fish and Wildlife Service. 2001. Endangered and Threatened Wildlife and Plants; 12-Month Finding for a Petition to List the Yellow-billed Cuckoo (*Coccyzus americanus*) in the Western Continental United States. Fed Reg. 66 (143): 38611-38626.
- U.S. Fish and Wildlife Service. 2002. A review of the first five years of the California Condor Reintroduction Program in Northern Arizona. February 14, 2002. Prepared by the Arizona Condor Review Team for the California condor Recovery Team and U.S. Fish and Wildlife Service, California/Nevada Operations Office, Sacramento, California.
- U.S. Fish and Wildlife Service. 2002. Final Recovery Plan Southwestern Willow Flycatcher. Albuquerque, New Mexico. Prepared by Southwestern Willow Flycatcher Recovery Team Technical Subgroup.
- U.S. Fish and Wildlife Service. 2014. Navajo sedge (*Carex specuicola*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service Arizona Ecological Services Field Office Phoenix, Arizona
- U.S. Fish and Wildlife Service. 2016. ECOS Environmental Conservation Online System. <https://ecos.fws.gov/ecp/>. Accessed 8/17/2016.
- Utah Division of Wildlife Resources 2003. <http://dwr.cdc.nr.utah.gov/ucdc/>
- Utah Division of Wildlife Resources. 2004. Unpublished data, Table 1: Spring counts of Utah prairie dogs by recovery area and land ownership. 2 pp.
- Utah Division of Wildlife Resources. 2007. Utah Species Distribution and Information. <http://dwr.cdc.nr.utah.gov/rsgis2/search>.
- Utah Rare Plants. 2004. <http://www.utahrareplants.org>.
- Verner, J., K.S. McKelvey, B.R. Noon, R.J. Gutierrez, G.I. Gould, Jr., and T.W. Beck, eds. 1992. The California spotted owl: a technical assessment of its current status. USDA

- Walker, L. W 1974. The book of owls. Alfred A. Knopf, New York, N.Y
- Welsh, S.L., N.D. Atwood, S. Goodrich and L.C. Higgins [eds.]. 1993. A Utah flora (2nd ed., revised). Provo, UT, Brigham Young Univ. 986 pp.
- Whitfield, M.J. 1990. Willow flycatcher reproductive response to brown-headed cowbird parasitism. Masters Thesis, California State University, Chico, California. 25 pp.
- Whitfield, M.J. and K.M. Enos. 1996. A Brown-headed Cowbird control program and monitoring for the Southwestern Willow Flycatcher, South Fork Kern River, California, 1996. California Department of Fish and Game, Sacramento. Final report for contract #FG4100WM-1.
- Wilbur, S.R. 1978. The California condor, 1966-76: a look at its past and future. U.S. Fish and Wildlife Service, North America Fauna 72:1-136.
- Wiley, D.W. 1998. Movements and habitat utilization by Mexican spotted owls within the canyon lands of Utah. PhD Thesis. Northern Arizona University. 87pp.
- Wilson, D.E. and S. Ruff. 1999. The Smithsonian book of North American mammals. Smithsonian Institution Press, Washington, DC.
- Zeveloff, S.I. 1950. Mammals of the Intermountain West. University of Utah Press, Salt Lake City, UT

9.0 LIST OF CONTACTS/PREPARERS

9.1 LIST OF DOCUMENT PREPARERS

Author: Megan Robinson, Ecologist/Biologist, Rocky Mountain
Environmental Research

9.2 LIST OF CONTACTS & PERSONAL COMMUNICATION

Pam Riddle, Wildlife Biologist, Bureau of Land Management, Moab Utah

Attachment 2:

U.S. Fish and Wildlife Service (Service) Measures to Minimize Effects of Surface Water Pumping to Endangered Colorado River Fish

Issue: Endangered larval fish are very small (<0.5 inches total length) and incapable of directed swimming from the time of hatching through the first 2-4 wks of their life. Depending on the water year, larval fish may be present in the Green, Colorado, Gunnison, and Yampa Rivers from as early as April 1 to as late as August 31 (earlier in dry years; later in wet years). Young of the year endangered fish are the most susceptible to entrainment.

Goal: Minimize entrainment of federally listed species into pumps.

Measures:

1. The best method to avoid entrainment is to pump from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a Service approved location is best.
2. If the pump head is located in the river channel the following stipulations apply:
 - a. do not situate the pump in a low-flow or no-flow area as these habitats tend to concentrate larval fishes.
 - b. limit the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (see above).
 - c. limit the amount of pumping, to the greatest extent possible, during the midnight hours (10pm to 2 am), as larval drift studies indicate that this is a period of greatest daily activity. Dusk and the afternoon are the preferred pumping times, as larval drift abundance is lowest during this time.
3. Screen all pump intakes with 3/32" mesh material.
4. Approach velocities for intake structures should follow the National Marine Fisheries Service's document "Fish Screening Criteria for Anadromous Salmonids". For projects with an in-stream intake that operate in stream reaches where larval fish may be present, the approach velocity should not exceed 0.33 feet per second (ft/s).
5. Report any fish impinged on the intake screen or entrained into irrigation canals to the Service (801.975.3330) or the Utah Division of Wildlife Resources:

Northeastern Region

152 East 100 North, Vernal, UT
84078
Phone: (435) 781-9453

Southeastern Region

475 West Price River Drive, Suite
C, Price, UT 84501
Phone: (435) 636-0260

Attachment 3

California Condor Lease Notice (9/30/2016)

The lessee/operator is given notice that the lands located in this parcel contain potential habitat for the California condor. Avoidance or use restrictions may be placed on portions on areas known or suspected to be used by condors. Application of appropriate measures would depend on whether the action is temporary or permanent, and whether it occurs within or outside potential habitat. A temporary action is completed prior to the following important season of use, leaving for habitat functionality. A permanent action continues for more than one season of habitat use, and/or causes a loss of condor habitat function or displaces condors through continued disturbance (i.e., creation of a permanent structure requiring repetitious maintenance or emits disruptive levels of noise).

Current avoidance and minimization measures include the following:

1. The Peregrine Fund will be contacted early and throughout project design and implementation to determine and monitor the locations and status of California condors in or near the project area.
2. Surveys would be required prior to operations in suitable habitat, unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s) approved by the BLM and must be conducted according to protocols consulted on with FWS.
3. All workers will be informed about potential condor presence.
4. If condors are present within the project area the Peregrine Fund will be contacted. If there is any potential that the project will affect condors, the USFWS will be contacted immediately;
5. The project area will be kept clean (e.g., trash disposed of, tools and materials picked up) in order to minimize the possibility of condors accessing inappropriate materials;
6. To prevent water contamination and potential condor poisoning, a hazardous material (including vehicle fluids) leakage and spill plan will be developed and implemented. The plan will include provisions for immediate clean-up of any hazardous substance, and will outline how each hazardous substance will be treated in case of leakage or spill. The plan will be reviewed by the district biologist to ensure condors are adequately addressed.
7. If surveys result in positive identification of condor use, all lease activities would require monitoring throughout the duration of the project to ensure desired results of applied mitigation and protection. Minimization measures would be evaluated during development and, if necessary, Section 7 consultation may be reinitiated.
8. Temporary activities within 1.0 mile of nest sites would not occur during the breeding season.
9. Temporary activities within 0.5 miles of established roosting sites or areas would not occur during the season of use, which is from August 1 to November 30, unless the area

has been surveyed according to protocols consulted on with FWS and determined to be unoccupied.

10. No permanent infrastructure would be placed within 1.0 mile of nest sites.
11. No permanent infrastructure would be placed within 0.5 miles of established roosting sites or areas.
12. Remove big game carrion to 100 feet from on lease roadways occurring within foraging range.
13. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
14. Re-initiation of Section 7 consultation with the USFWS would be sought immediately if mortality or disturbance to California condors is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures would be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.

Additional measures may also be employed to avoid or minimize effects to the species between the lease sale and lease development stages. These additional measures would be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.

Attachment 4

Navajo Sedge Lease Notice (9/30/2019)

The lessee/operator is given notice that the lands located in this parcel contain potential habitat for Navajo sedge (*Carex specuicola*).

In order to minimize effects to the federally threatened Navajo sedge, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service (Service) has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during mineral leasing and development (including but not limited to drilling, production, and maintenance operations) are in compliance with the Endangered Species Act.

For the purposes of this document, the following terms are so defined: *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment. *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence, determined by field inspection and/or surveys. Habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/species/>. *Occupied habitat* is defined as areas currently or historically known to support Navajo sedge; synonymous with “known habitat.”

The following avoidance and minimization measures should be included in the plan of development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Navajo sedge habitat is present.
2. Species surveys will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, “avoidance areas”). In such cases, a) 300 foot buffers will be maintained between surface disturbance and avoidance areas, or b) 1.25 mile buffers will be maintained between avoidance areas and subsurface disturbance activities (including drilling), water depletions, or other actions that may result in changes to the local hydrology and avoidance areas. However, site specific distances will need to be approved by Service and BLM when surface disturbance will occur upslope of habitat. Where conditions allow, surveys:
 - a) Must be conducted by a qualified botanist(s), and according to BLM and FWS accepted survey protocols (USFWS 2011); outside contractors must be considered a *Carex* spp. expert and approved by BLM and FWS;
 - b) Will be conducted in suitable habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be positively identified (usually June 1st to September 30th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS *Carex* spp. expert or demonstrating that the nearest known population is in flower);
 - c) Will occur within 300 feet from the edge of the proposed right-of-way and/or

project disturbance for surface pipelines, roads, well pads, and other facilities requiring removal of vegetation;

- d) Will occur within 1.25 miles of proposed water depletions or other actions that will result in changes to the local hydrology.
 - e) Will include, but not be limited to, plant species lists and habitat characteristics, and;
 - f) Will be valid until June 1st of the following year.
 - g) Electronic copies of clearance survey reports (included appendices) and GIS shape files will be sent no later than December 31st to each of the following:
 - Utah Natural Heritage Program (with copies of NHP field survey forms),;
 - Applicable/affected land owners and/or management agencies; and
 - U.S. Fish and Wildlife Service Utah Field Office (mailing address: 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119).
3. Design project infrastructure to minimize impacts within suitable habitat where surveys are technically infeasible:
- a) For surface disturbing activities: Infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300 foot buffers; however, site specific buffer distances will need to be approved by Service and BLM when disturbance will occur upslope of habitat.
 - b) For subsurface activities (including drilling), water depletions, or hydrologic alteration activities: Infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 1.25 mile surface and subsurface buffers; however, site specific buffer distances will need to be approved by Service and BLM when disturbance will occur upslope of habitat.
 - c) No surface (or subsurface) occupancy will be allowed in any down dip(s) of the strata as they could be associated with a Navajo sedge water source. Surface disturbance will not occur within a 300 foot buffer from the outer edge of the down dip(s);
 - d) Ensure that water extraction or disposal practices do not result in change of hydrologic regime;
 - e) Ensure above ground contaminants and byproducts are contained and properly managed;
 - f) Ensure any casings near or in aquifers are properly sealed and managed;
 - g) Fracking will not be allowed within 1.25 miles of the edge of suitable geology, unless hydrological and botanical surveys are completed that positively identify the aquifer as entirely unassociated with any Navajo sedge populations;
 - h) Reduce well pad size and potash mining developments to the minimum needed, without compromising safety;
 - i) Where technically and economically feasible, use directional drilling, horizontal drilling, or multiple wells from the same pad. Ensure that directional drilling does not intercept or degrade alluvial aquifers;
 - j) Limit new access routes created by the project;
 - k) Roads and utilities should share common right-of ways where possible;
 - l) Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within

habitat;

- m) Place signing to limit off-road travel in sensitive areas;
- n) Existing roads will be graveled within 300 feet of suitable habitat; the operator is encouraged to apply water for dust abatement to such areas and within 300 feet of suitable habitat from June 1st to September 30th (flowering and fruit set period); dust abatement applications will be comprised of water only;
- o) Place signing to reduce vehicle speed to 15 mph or lower on dirt or gravel roads within 300 feet of suitable habitat and 25 mph or lower in the project area.
- p) Stay on designated routes and other cleared/approved areas;
- q) Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim disturbed areas following completion of activities (drilling or mining) to the smallest area possible. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area.
- r) Post construction monitoring for invasive species will be required.

4. Where there is occupied habitat, project infrastructure will be designed to avoid direct disturbance and indirect impacts to populations and to individual plants:

- a) For surface disturbing activities: Infrastructure and activities will avoid all occupied habitat and incorporate 300 foot buffers; however, site specific buffer distances will need to be approved by Service and BLM when disturbance will occur upslope of habitat;
- b) For subsurface activities (including drilling), water depletions, or hydrologic alteration activities: Infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 1.25 mile buffers; however, site specific buffer distances will need to be approved by Service and BLM when disturbance will occur upslope of habitat;
- c) To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged;
- d) No surface (or subsurface) occupancy will be allowed in the down dip(s) of the strata associated with the Navajo sedge water source. Surface disturbance will not occur within a 300 foot buffer from the outer edge of the down dip(s);
- e) Ensure that water extraction or disposal practices do not result in change of hydrologic regime;
- f) Ensure above ground contaminants and byproducts are contained and properly managed;
- g) Ensure any casings near or in aquifers are properly sealed and managed;
- h) Fracking will not be allowed within 1.25 miles from the edge of occupied habitat and associated water sources, unless studies are completed that positively identify the aquifer as entirely unassociated with the Navajo sedge population;
- i) Reduce well pad size and potash mining developments to the minimum needed, without compromising safety;
- j) Where technically and economically feasible, use directional drilling, horizontal drilling, or multiple wells from the same pad. Ensure that directional drilling

- does not intercept or degrade alluvial aquifers;
- k) Limit new access routes created by the project;
- l) Roads and utilities should share common right-of ways where possible;
- m) Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat;
- n) Place signing to limit off-road travel in sensitive areas;
- o) Construction of roads will occur such that the edge of the right of way is at least 300 feet from: (1) any plant; (2) the outer boundary of occupied habitat; and (3) avoidance areas;
- p) Existing roads will be graveled within 300 feet of occupied habitat; the operator is encouraged to apply water for dust abatement to such areas and within 300 feet of occupied habitat from June 1st to September 30th (flowering and fruit set period); dust abatement applications will be comprised of water only;
- q) Place signing to reduce vehicle speed to 15 mph or lower on dirt or gravel roads within 300 feet of occupied habitat and 25 mph or lower in the project area.
- r) Stay on designated routes and other cleared/approved areas;
- s) The edge of the disturbance should be located at least 300 feet away from plants and avoidance areas, in general; however, site specific distances will need to be approved by Service and BLM when disturbance will occur upslope of habitat;
- t) Surface pipelines will be laid such that a 300 foot buffer exists between the edge of the right of way and plants and 300 feet between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by Service and BLM when disturbance will occur upslope of habitat;
- u) Construction activities will not occur within occupied habitat;
- v) Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.;
- w) A qualified botanist will be on site during construction to monitor the surface disturbance activity and assist with implementation of applicable conservation measures (USFWS 2011);
- x) Place produced oil, water, condensate tanks, or any other by-products in centralized locations, away from occupied habitat; and
- y) Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim disturbed areas following completion of activities (drilling or mining) to the smallest area possible. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area.
- z) Post construction monitoring for invasive species will be required.

5. For projects that cannot implement the measures or avoidance buffers identified above, site specific conservation measures will be developed in coordination with the Service. Occupied Navajo sedge habitats within: (1) 300 ft of the edge of the surface pipeline right of ways; (2) 300 ft of the edge of the road right of ways; (3) 300 ft from the edge of the development areas; and (4) 1.25 miles of subsurface activities (including drilling), water depletions or other hydrologic alteration activities shall be monitored for a period of three years after ground disturbing

activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.

6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Navajo sedge is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the Service to ensure continued compliance with the ESA.

Literature Cited:

U.S. Fish and Wildlife Service (USFWS). 2011. Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed, and Candidate Plants. Utah Ecological Services Field Office, West Valley City, Utah. August 2011. Available at: <http://www.fws.gov/utahfieldoffice/SurveyorInfo.html>